STATE OF CALIFORNIA

ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

RENEWABLES PROGRAM COMMITTEE WORKSHOP

DOCKET NO. 96-REN-1890

Tuesday, November 19, 1996

10:20 o'clock a.m.

Held at the

California Department of Transportation (CalTrans)

111 Grand Avenue, Auditorium

Oakland, California

REPORTED BY: SUSAN PALMER

COMMISSIONERS PRESENT
(Alphabetically Listed)

MICHAL MOORE, Presiding

JANANNE SHARPLESS

STAFF PRESENT
(Alphabetically Listed)

MANUEL ALVAREZ

JONATHAN BLEES

CARRIE HILTON

MARWAN MASRI

ROSELLA SHAPIRO

ALSO PRESENT
(Alphabetically Listed)

DONALD W. AITKEN, Ph.D., Union of Concerned Scientists

ROBERT BOYD, Zon Corporation

BARRY BUTLER, Science Applications Information Corporation

RAY DRACKER, Bechtel Corporation

ROBERT ELLERY, United American Energy

RICHARD FERGUSON, Sierra Club

TOM HINRICHS, American Geothermal Energy Association

ROBERT JUDD, California Biomass Energy Alliance

STEVEN KALLAND, Solar Energy Industrial Association

JIM KENNELLY, Project Development

DANIEL KIRSHNER, Environmental Defense Fund

JODY LONDON, Working Assets

ERIC MILLER, Foresight Energy Corporation

ORVILLE MOE, Energy 2000, Inc., Thousand Oaks, California

ALAN PURVES, Leland Gas Recovery Systems

NANCY RADER, American Wind Energy Association

RICHARD SOWTER, British Petroleum (BP) Solar

HOWARD WENGER, Pacific Energy Group

ERIC WILLS, Dagget Leasing Corporation

INDEX

P R O C E E D I N G S

PRESIDING COMMISSIONER MOORE: Good morning. I'll tell you in advance that we don't have a public address system, so we'll speak as clearly as we can up here and hope that you can hear us out there.

We are being recorded. And when we ask you to come up and address us, we'll ask you to come up to the podium where there actually is a microphone for amplification.

And so with that I will open the Workshop on November 19th, 1996 for the Committee on Renewables. I'm Michal Moore. For those of you who haven't met me before, I'm a Commissioner with the California Energy Commission.

And I am joined by my colleague Jan Sharpless on my right, who is also a Commissioner with the Commission.

We have our Aides here, Manuel Alvarez on my left; Rosella Shapiro on Jan's right; and Jonathan Blees, an attorney who works for us on the Committee is also with us on the dais.

These are very informal hearings.

COMMISSIONER SHARPLESS: Workshops.

COMMISSIONER MOORE: And they're designed to facilitate communication between us, and start to frame, in an ever narrowing fashion, the issues that we'll have to deal with prior to issuing our report to the Legislature on March the 31st.

I have a couple of opening remarks. It's a little bit of the gospel, so if you'll bear with me. If you've heard it before, Staff reminds me that I need to repeat it just so it's clear what direction we're going.

We're starting focus, obviously, in a narrower and narrower fashion. It is clear, it should be clear to everyone here or everyone who is following these proceedings, that our objective is to derive and encourage the greatest degree of consensus among industry players and across industry types that it is possible to achieve prior to our starting to go back to our own colleagues with proposals.

This may not happen. We're aware of that, even though we encourage it, even though we do our best to generate the documents that will include it, it may not happen.

You should know that if it doesn't you're looking at the two people who will take and will make the decisions. We'll derive a system and we'll carry that system up to the Legislature with the greatest force that we can in order to get it enacted.

It's not a threat, because neither one of us asked for this assignment. That's just the way it is. We have a job to do. We have very, very little time to do it. And that's why we're so actively involving you in our process.

Just so you know that if in the end a consensus, that's workable, that's acceptable obviously up here, is not forthcoming, we'll take the bull by the horns. We'll derive one. We'll derive the defense for it. And we will defend it. And I have absolutely no intention of losing at the Legislature when I go to present that report. Just so that's clear. I didn't spend all those years in political life learning how to lose, and neither did Jan.

So we're here to make a product that works and we're here to make a product that sells, I promise you.

So with that, we have very little time to do it. We expect to be working forward towards a set of hearings in early December.

Those hearings will be designed to focus on some set -- I don't know how many -- but some set of possible solutions to the problems that we are tasked with solving in the legislation. That means that they are basically this workshop and one other in which we can debate these things. And then you can see us coming to closer.

Because frankly, we have to be impressed with some kind of a document in front of our colleagues, a draft or otherwise, in the middle of January. So you can work out the math for yourself, how much time we've got to construct that final document, and it's not very much.

I will be asking this morning for comments from individuals on the emerging efforts to forge a coalition on one front or another. And, again, this is a very informal hearing, so you can expect a good deal of debate from us about the particulars or the edges of the questions that those raise.

And that will include or Staff representatives. Marwan is here. Most of you know him. And you can expect that he'll participate as actively as the Commissioners will when questions need to be asked and points need to be clarified, as well from our aides.

The last point of housekeeping, I am aware that the PUC is running a beauty contest across the Bay where they're going to try and steal our participants, and that several of you have noted that you'd rather be over there than here. I'm taking that into account. You lose points for that.

[Laughter]

PRESIDING COMMISSIONER MOORE: But we'll accommodate those, absolutely to the best of our ability we'll accommodated because I know you need to transit. So we'll try and take that testimony in the morning.

And, again, if somebody has a time constraint of any other kind, babysitters, transit, that kind of thing, let me know and I'll do absolutely my best to accommodate it.

Jan.

COMMISSIONER SHARPLESS: I don't know that I can add to anything that Michal said except that in reviewing the proposals, we obviously will be directed by the legislation has told the Committee to use as its screening criteria.

So while I underscore what Michal says as far as looking forward to consensus building, it will be within that context. I think that the Committee has to make sure that it has met the criteria that has been established by the Legislature. And I notice in some of the documentation that we've received so far there has been an attempt to tie the proposals back the legislation. That's good.

But I also I think that there's a very important balance that will have to be made by the Committee. And so please keep that in mind.

We do encourage the coalitions. We encourage the consensus. But the Committee is driven by the mandates of 1890, and we will do our best to carry through on what the Legislature has dictated for us.

So we look forward to today's hearing, the proposals and the presentation and as these things unfold and as questions are asked and more information is provided.

Thank you, Michal.

PRESIDING COMMISSIONER MOORE: Thank you.

With that we're going to open, and I'll be calling on initially those who have indicated to us that they're in the process of either forming up some kind of coalition or they've presented a set of ideas to us in the form of answers to the questions that we've asked.

And, of course, in the end any proposal -- and we understand that things are in the process of getting fleshed out right now -- but in the end, any proposal that gets seriously considered is going to have to answer all these questions, is going to have deal with everyone of these. Because as you well know, when look at what's presented, we'll be asking the very same questions, trying to understand how they all fit together.

So with that I'm going to ask Rich Ferguson from the Sierra Club, who already -- you lose 15 points for being at the PUC this afternoon. Rich.

MR. FERGUSON: Well, it's a good thing I'm not asking for any money.

[Laughter.]

PRESIDING COMMISSIONER MOORE: That's right.

MR. FERGUSON: I appreciate being able to present this. It's somewhat different from I think most of the other proposals that you've had before you. But the local environment was on the ground that could deal on a day-to-day basis with the existing project, and asked me to make the following request.

We've been working for many years in a constructive way with the renewable developers. And we're aware that many of the problems that exist on many existing projects, and we've been trying to work to find ways to solve these problems. I'm going to talk today about the wind industry because that's where some of the greatest concern is.

The two problems are for site impacts, like erosion that we've been working on. There's also, going to the financial conditions under which the industry has been working with, there's a problem of abandoned turbines and how these sites are going to get cleaned up or what's going to happen to them.

There are those, and I'm not among them, who when they found out about the funding in AB 1890, would say the industry should get none of this money until these problems are fixed. I don't think that's a practical approach. Nevertheless, I understand the sentiment.

What we would like to see is some mechanism whereby the industry and the environmentalists together can begin working on the problem.

Part of the problem is that we don't really know how extensive these problems are. We don't know what it would take to fix them. We don't know the kind of legal entanglements that exist at some of the abandoned sites and so on. So we have approached CEC Staff in the Environmental Siting Division as to what can we do work on these problems, with the idea that perhaps some of the money that's in AB 1890 could be used to these some of these environmental problems.

We were informed that there may be other funds available to work on this too, although my reading of the law, the conditions on the use of this funding in AB 1890 would certainly be a good fit.

We are working with the industry right now to put together a joint letter to the Commission asking for your support of what we're calling the Scoping Study by Energy Commission Staff.

The goal of the Study will be fourfold:

The first is to get an independent assessment about what problems exist.

The second is to evaluate how extensive the problems are and try to get some sort of list of priorities.

The third one is to assess the legal implications and entanglements, which may complicate things.

And the fourth is to design appropriate response strategies and to try to get a handle on costs.

Your Staff thinks that if we did what we're calling a Scoping Study, that they may be able to do this by the end of the year. In which case, then the Commission could make some judgment about how they want to proceed to this.

We're still working on the draft letter and talking to industry representatives about how to go forward with this. We are very encouraged with our discussion with Staff.

And basically what I'm here today to ask you is to support this concept and to let us go forward with this kind of scoping study so we can get a handle on these problems and know how to address them.

I hope to have this letter to you by this week. And I will docket it along with the other filings, unless you've got a better suggestion.

PRESIDING COMMISSIONER MOORE: Well, let me just see if I can classify a couple of the points that you've made.

First of all, what you're interested in having is a structure or a process that would be embedded over the next four years running parallel to the allocation of money for renewable resources that would evaluate, at some stage or on a continuous basis, the environmental effects of either continuing with or implementing new renewable strategies. Am I correct?

MR. FERGUSON: No. Our hope is that we could begin to -- I mean the problems that we know that exist are on the existing project sites.

And we are actually hoping that we could begin addressing these problems as early as next year or as soon as possible. How long it would take to actually solve these problems, I'm not prepared to say.

I think the only reason why it makes sense to bring it up now is that depending on what sources or funding are available to address these, it may be useful to use some of the money in AB

1890 to do that with. We don't that. We don't know how much it's going to cost.

And until we do some sort of initial scoping study to find out what we've got out there, we don't really know what we're asking for. And that was --

PRESIDING COMMISSIONER MOORE: So these are projects that have been through an EIR or an EIS perhaps, if they involved any kind of federal assistance, and they've had an environmental evaluation at some point in their life. And you are implicitly suggesting this evaluation and mitigations that were incorporated in it in order to get the projects approved was inadequate?

MR. FERGUSON: A lot has happened since those projects were sited, is what we're saying. And there are now problems that have been exacerbated by the financial hardship under which the industry has been working. So that there just basically hasn't been any money available.

We had begun talking when the BRPU was in progress that if some of these contracts were awarded, that the industry would have some cash to begin to solve some of these problems. When that died, we were broke again. So --

PRESIDING COMMISSIONER MOORE: Well, okay. I mean it's easy to see projects that were approved under a different regime, under a different knowledge base or something else, but you're peering into a can that is pretty deep. Because we open that can, we're going to open the CEQA process, we're going to open the NEPA process, and ask ourselves: Why didn't we either set aside an adequate source of funds through a letter of credit, an annuity?

Why did we inadequately address on the -- and I use that phrase the broadest way publish -- the environmental problems that would likely ensue from a project like this? Potential bankruptcy, lack of funds in the future is certainly a condition that's attendant, at least possible, when a project is approved.

So if we go down this road and we indict anyone in a policy sense, we're going to open that box. And we will have to have somebody for legal fees the day we do that.

MR. FERGUSON: Yeah. Because we weren't looking at this as sort of an enforcement or an indictment situation. I mean we're trying to make this as cooperative as possible.

But it's true those questions should have been asked, and they were not asked rigorously enough. And I guarantee that any new project that comes on, they will be raised in spades.

PRESIDING COMMISSIONER MOORE: Well, okay.

MR. FERGUSON: But I guess my question to you is should we continue to ignore it.

PRESIDING COMMISSIONER MOORE: Okay. Well, let's just say we did the scoping study. We cracked out a group of funds to do this. And we did it. And we identified, predictably, a set of problems that are now going to emerge as a result of this.

What would we do with that? And who would the audience for such a document or such a device be?

MR. FERGUSON: I guess it kind of depends on what we find. It may be necessary to make a recommendation to the Legislature, if we need to sort of unsnarl the legal situation. For example, just elect somebody, whoever it is, remove abandoned turbines without incurring a whole bunch of liability.

I guess I don't know the answer to that until we look and see exactly what the problems are.

PRESIDING COMMISSIONER MOORE: And you envision the Staff doing the scoping report. When you said within a year, you meant this calendar year, '96?

MR. FERGUSON: Yes. That is what we were informed that they should be able to get a pretty good idea of what's out there in a couple of months.

PRESIDING COMMISSIONER MOORE: Marwan, were you in those discussions?

MR. MASRI: No. Rich and I had a phone --

MR. FERGUSON: It was --

MR. MASRI: -- conversation. I referred him to the Environmental Division because I know that they're looking at this question of environmental impact.

PRESIDING COMMISSIONER MOORE: Is there someone here from that Staff today?

MR. MASRI: But I was not party to that discussion.

MR. FERGUSON: No. It was a Bob Therkelsen and Bob Haussler were at the meeting.

PRESIDING COMMISSIONER MOORE: Okay.

MR. FERGUSON: At any rate, really this is to inform you that a letter is going to come to the Commission --

PRESIDING COMMISSIONER MOORE: Good.

MR. FERGUSON: -- requesting this. I'm really just informing. And we'll have continuing discussion.

PRESIDING COMMISSIONER MOORE: Rich, I think it's a great idea. I'm starting to tease apart, well, what would I do if I had such a lit firecracker in my hand right now. I'm not quite sure.

Jan.

COMMISSIONER SHARPLESS: Yeah. A couple of questions.

First of all, I think I heard you saying "wind," but does your proposal restrict itself to wind, and if so, why not ever other technology that might have a environmental problem?

MR. FERGUSON: I admit it's mostly because those are the projects where our people have identified have the most serious problems.

My initial reaction was the same as yours: Let's look at the geothermal plants and biomass plants and see what kind of problems they've got.

We could do that and I would certainly support it. It was really just because we are most aware and have been working most intensely with the wind industry on this.

COMMISSIONER SHARPLESS: Because whatever we do, I think we have to treat everybody fairly. And --

MR. FERGUSON: I would certainly support expanding it, yeah.

COMMISSIONER SHARPLESS: And I'm not suggesting that there's other technologies out there with pained looks on their faces that we might want to expand this. But I am suggesting that if we focus on one, how we would rationalize, how we would justify expenditure on only one technology.

MR. FERGUSON: I don't know the answer to that.

COMMISSIONER SHARPLESS: Does your letter address that?

MR. FERGUSON: No. No, it doesn't.

COMMISSIONER SHARPLESS: Or does your letter --

MR. FERGUSON: We would --

COMMISSIONER SHARPLESS: -- purely focus on wind?

MR. FERGUSON: This one purely focuses on wind. We would certainly support expanding the study if that's possible.

We're worried about timing a little bit. There are some particular problems that we hope we can address. So it's a --

COMMISSIONER SHARPLESS: Do you have any idea -- I guess by a scoping study, this is what you're trying to determine -- how big of a problem and how much money might be needed in order to deal with that problem, and would you be willing to put all of our $540 million in cleaning up the wind industry?

MR. FERGUSON: Certainly not. I mean I can't imagine that it's anything like that kind of scale. Lord, I certainly hope not.

COMMISSIONER SHARPLESS: If it was a relatively big scale, though, how would we make a determination of how to best spend that money if it took half the money or a quarter of the money?

MR. FERGUSON: If we were even in that kind of ballpark, then we've got major problems.

COMMISSIONER SHARPLESS: Then we've got major problems.

MR. FERGUSON: We should maybe have an entirely different discussion in this proceeding about how to give away -- I can't imagine in my wildest dreams it's that big of a problem.

COMMISSIONER SHARPLESS: Okay. And, Mr. Ferguson, the last question is: Can you cite me somewhere in 1890 an 1890 provision that allows moneys to be spent for this purpose?

MR. FERGUSON: Well, I don't have my copy of the bill, but it did talk about the benefits to California of continued operation of existing projects. And to my mind, you don't have those benefits unless you are addressing, you fix the problems that they have, the environmental problems that they have.

COMMISSIONER SHARPLESS: Where do you divide the line between the responsibility of the industry to fix those problems and the responsibility of the public purpose moneys to carry out the directive that we are trying to attempt to make a renewable industry sustainable and competitive?

MR. FERGUSON: That's an excellent question. And as I said at the beginning, there are those who would just say, "This is an industry problem. The industry should deal with it. And they shouldn't get another penny from the public until they do."

My own approach is that I think we're going to have more success addressing these problems if we have this sort of industry and public cooperation at least to initially find out what the problems are.

But I think the industry does need some help to address these problems. And we're prepared to give them our assistance in this, but it is an excellent question. And I don't know the answer.

PRESIDING COMMISSIONER MOORE: Thank you, Jan.

COMMISSIONER SHARPLESS: Thank you, Mr. Ferguson.

MR. ALVAREZ: Mr. Ferguson, I have just one question.

If we were to pursue this scoping study that you discussed, and I guess I would see a demarcation once that analysis is completed between projects that may qualify for funding and projects that may not qualify for funding based on that reconnaissance?

MR. FERGUSON: That is not my thinking now. I suppose if it turns out that there's some sort of egregious problem from certain projects that that may emerge. I don't expect that to be the result.

I think we're really just looking for some funds to help solve these problems in a cooperative way.

MR. ALVAREZ: Thank you.

PRESIDING COMMISSIONER MOORE: Marwan.

MR. MASRI: I guess to following up on that question, Rich. Are some of these problems related to operation of the projects or they're independent of whether the project operates or not, erosion, for example? Whatever problems you're looking at, are any of them related to continued operation of these projects?

MR. FERGUSON: I don't know the answer to that one, Marwan.

MR. MASRI: Okay.

MR. FERGUSON: I think that's one of the questions that needs to be answered. I mean there are some projects out there that are limping along. And I don't know the extent that whether they operate or don't operate how the problems change. So I don't know.

MR. MASRI: What I mean is if we are somehow able to take into account externalities of all the projects, not just wind, the reason I'm asking if this is related to operation, because if it's not, it's not really the externality of the wind system running but of it's being built, and therefore is it sort of a sunk externality cost, if you will.

And I think if you're not -- maybe you can address that in the study that you are talking about.

And the other question is: Do you envision that the cost of the money that you will be requesting come out of the wind share, if you will, when the allocation is done, or comes off the top where all industries contribute to this? And that also relates to Commissioner Sharpless' question of “Why wind?” Should they all contribute to that or is it just a wind problem?

MR. FERGUSON: Well, again, I guess I'm not prepared to try to answer that question right now. We were very encouraged that there may be some other sources of funding which would not interfere with whatever comes out of your recommendations.

There was some indication that there may be some PVA money available for this.

Again, I sort of hesitate to try to answer any of these questions until somebody goes out and takes an impartial look and gets some sort of assessment of what's there.

PRESIDING COMMISSIONER MOORE: You'll flesh this out in your letter to us. And you can see the range of questions that you raise, just by the issue.

MR. FERGUSON: I guess my response is rather than to try to answer those questions now, since they're all good questions, is to first let's try to find out what the problems are and aren't.

PRESIDING COMMISSIONER MOORE: Yeah. I'm saying my point badly. That what I'm saying is that the kind of questions that are raised should, it seems to me, drive some of the detail in your letter about what you expect a study to do and the framework in which it would get established.

In other words, to just say “We ought to do a study,” and leave it fairly open, is likely not to get, in the end when we start moving pretty fast enough not to get the positive response you'd like to get, the more detail you put into it and the more you can anticipate where such a study ought to go, the more likely success you're going to have.

MR. FERGUSON: I will go rewrite the draft.

PRESIDING COMMISSIONER MOORE: Thank you.

I think, in fairness, let me turn to Nancy Rader, who had a card in.

MS. SHAPIRO: No, no. It was for Hap. She gave it, but it's Hap's name.

PRESIDING COMMISSIONER MOORE: Oh, I'm sorry. Nancy gave us Hap Boyd's card.

MR. BOYD: Thank you. I'm Robert Boyd with Zon Corporation. We're a wind development company, we also manufacture wind turbines, out of Tehachapi, California.

Rich and I have discussed this. I guess I look at a little differently than he does.

Number one, all these projects were permitted by counties. Alameda County, for example, has a five-year review process where each developer has to report the status of their project. And at that time they can change conditions or they can shut a project down and ask it to be removed.

That County also has a fund that developers have put money into to remove derelict turbines. So if they want to call on that, they can.

I can't address the other two counties' ordinances right now because I'm not that familiar with them, Kern County or Riverside. But I would assume there are similar enforcement provisions. And what I don't understand is if somebody has a problem with projects in a particular county, why they haven't gone to the county and discussed it with them.

Also, the CEC collects records of production on a quarterly basis of every project in California. And it seems to me that this is a good way of looking at them and seeing what they're doing.

I agree that there are some problems out there, some problems that should be addressed. But I'm not sure that getting the state involved is the proper way to do it. I think that the counties have the enforcement authority, and that we ought to start where that authority lies.

Thank you.

PRESIDING COMMISSIONER MOORE: Thank you.

While trying to stay on the -- as long as we're on wind, let me then turn back to Nancy and ask you to come up. You've got comments on he renewable presentation.

Nancy Rader.

MR. JUDD: Commissioner Moore, as you can see, I'm not Nancy Rader.

Nancy and myself and Tom Hinrichs, if he's arrived yet out of the fog of Burbank, jointly would like to present the status and proposal for the renewable industry.

PRESIDING COMMISSIONER MOORE: Are you ready right now or do you want me to wait?

MR. JUDD: Would you mind deferring on our item until maybe a quarter after 11:00? We'll see if Tom gets here.

PRESIDING COMMISSIONER MOORE: All right.

MR. JUDD: He was at Burbank Airport and he was stuck in the fog.

We are ready to present, though, if he does not arrive.

PRESIDING COMMISSIONER MOORE: Sure.

MR. JUDD: But maybe give him a couple of minutes here.

PRESIDING COMMISSIONER MOORE: Happy to do it.

MR. JUDD: Thanks.

PRESIDING COMMISSIONER MOORE: Okay. Don Aitken, you're down twice. And you've got a proposal, a funding proposal for solar?

DR. AITKEN: I have a solar proposing funding now and then a certification consensus --

PRESIDING COMMISSIONER MOORE: Come on up.

DR. AITKEN: We're continuing to identify ourselves for the record, as we do. I'm Donald Aitken, Senior Scientist, for the Union of Concerned Scientists.

We submitted support in the expectation that we will be participating in the industry coalition presentation that you just had and didn't have, but will have pretty soon. So we screwed up the order just very so slightly hire, but it's not going to cause a problem.

The background of these comments is that the proposal that will be presented to you by Bob Judd and his colleagues will represent three of the four major industries: Biomass, geothermal and wind. And the solar electric technologies are not in that proposal.

There's no solar component in that because the industry determined funding levels to maintain commercial viability and to means the aims of AB 1890 add up to more than a hundred percent of the funds that are being considered to be distributed among the industries. This is just a built-in hazard, I must say, with what we call systems-benefit charge.

And people have been telling us at the NARUC meetings the last couple of days that it's likely that we have a systems-benefit charge instead of a renewable portfolio standard because it's so much easier. And take a look at what happens when you have a pot money and you turn in the industries loose to see how that pot is going to be divide up.

Anyway, the absence of solar disturbs me. I'm aware of the coalition being put together by the solar industries themselves. I'm aware of the numbers that they are asking for, and that they will put in. I had expected them to put in today. And aware that those numbers don't add up.

So the question is: Can you have a coalition of all four of those industries and still have it work within the intent of AB 1890. And I believe it can. And I've consequently written my testimony focused on the solar technologies in a way that shows that I think that it can.

And I'm not going to take the time to reread, but for the interest of the group here, I'm just going to do a quick summary of the high points here. You have the written version and a bunch of you do, too. I had it handed out outside.

The task is clearly to maximize the prior benefits that are coming from prior investments that we have in the state. So there's a strong incentive and need to focus on existing capacity and to supplement existing capacity with new applications of those technologies that can continue to drive the cost down of the existing capacities.

But we also believe that it's the clear intent of AB 1890 to provide stimulus to emerging technologies that could profit the greatest in this very short amount of time with relatively few funds. And that can help skew the allocation of the funding toward the ones with potentially the greatest bang for the buck -- an expression I hate, but I have yet to find another one that works quite as well on that.

And, finally, we're taking note of the explicit requirements for the protection of benefits that are external to energy and capacity.

And we put all of these together in a framework. And what I did is I analyzed four of the solar electric technologies: Photovoltaics, parabolic troughs, solar thermal electric generation, Dish Stirling solar thermal electric generation, and solar central receiver thermal electric generation, in light of this framework of what I felt was the need to make the most productive use of the allocations in AB 1890, and cutting to the conclusions that we came up with.

We believe that if a hundred million dollars or so, which is around 18 percent, from the renewable energy technology support of AB 1890, can be supplemented by 50 million from the energy efficiency and conservation allocations in support of the DSM applications of building-mounted PV, if we can do that cross-over and if we can then judiciously use some of the R&D funds for two of the technologies that we feel are still not in the commercially-emerging category, we believe that a viable solar technology component can be introduced, can be sustained and can be supported.

We are aware of serious work being done by the photovoltaics collaboration that's leading to a proposal, a commercialization proposal of the order of a hundred million dollars. We are in support of that. That is a very clear commercialization path that it's on. It looks just like the Model T did and just like the commercialization path for computers and so on.

And it can be projected reliably to real market opening conditions within this four-year time span.

But the question is whether the full hundred million should come out of this. And our response is that we don't think California is really going to have to go it alone in the commercialization of PV. We don't think this particular funding opportunity is going to have to or should have to carry it alone, as well.

And so our support for the PV coalition proposal is tempered by saying that we believe the funding needs to come from multiple directions.

And that opens up the possibility of making the rest work. That would be for the new or applicable to the new applications.

For the existing applications, we focused on solar parabolic trough. And recommended that it's possibly going to need close to $50 million to keep them viable, but we argue that the present technology that they have really can't achieve major cost reduction. And so it's a curious technology whereby they were cut short from the development of the LS-4, the development of the next stage.

And in order to achieve cost reductions, they have to go through a new stage of reach and development, really, for items that have not yet been built. And yet we believe that we have 354 megawatts of the solar thermal electric generation here that's making good use of prior investments and is important for existing capital.

When you add those together you get a $150 million of which we're proposing 50 million come in from other quarters, which reduces to a hundred million dollars or so for this particular area that we're speaking of here, which is around 18 percent or so. And we believe that while that would be a bottom figure, 20 percent or so might be a little bit better, we think it could work.

I want to finally say that I'm in agreement with the view that if possibly as small as $10 million or as little as $10 million could be advanced to Dish Stirling, that we might see a remarkably fast jumpstarting of that very high efficiency technology during this period. And we would certainly be in favor of finding $10 million from within this hundred million, if that can be worked out, or otherwise from the other technologies for that.

For solar central receiver, we really believe that we're still looking at demonstration projects and that there's nothing that could be done in the next four years with such a small amount of money in such a short time that can drive that technology down to commercialization values. And we don't believe that it's going to be subject to applications in the state anyway.

So what we've done is we've put numbers together here. We feel that this analysis and these numbers are sufficient to enable us to come in on November 26th as a party to the industry coalition, where we are unauthorized representatives of the solar industry.

Now we would hope that at least the major segment of the solar industry would come in on this by then, but we don't know. But if the solar industries do submit their own proposal, we think it's important to have this counter-coalition proposal before you that shows that we think it can represent all four industries. That's why we did that work.

PRESIDING COMMISSIONER MOORE: Don, let me take you back to your very early remarks in this where you said that you could use the hundred million dollars out of the funds that we're recommending on, and --

DR. AITKEN: Out of the 540 or 465, no one really quite knows what it's going to be.

PRESIDING COMMISSIONER MOORE: Out of the 540, whatever the number finally turns out to be, and you need a cross-over from the conservation funds and a cross-over from the R&D funds. Two questions on that.

One, what's the magnitude of the cross-over that you think is really necessary?

And, two, if that crossover's not forthcoming, are you adequate at a hundred million given the arguments that you're making, or would then that hundred million have to become some other number to compensate for the lack of the third leg on this stool, if you will?

DR. AITKEN: I would like to have stood before you and be asking for a 160 to a 170, which is in excess of 25 percent. The numerical conclusions were that it just ain't there, or if it is there, it comes out of the carefully considered proposals by the other three industries.

And our perspective on this is we really respect the ability of the industries themselves to determine what's the bare bones levels by which we can remain viable. And we're not prepared to challenge the numerical analyses of the other three industries.

To go to your question, we are really in favor of the photovoltaic commercialization plan at roughly a hundred million dollar level, which suggests that we are proposing that $50 million toward that would come out of the 872 million in the conservation and efficiency. And that it would be appropriate, because it is a profound DSM and peaking reduction as well as an environmental protection technology. So there is the answer to that one.

And the R&D funds, we believe, should be applied, some portion of the public goods R&D funds, to carrying both solar central receiver, or helping to carry solar central receiver and Dish Stirling to a next stage of demonstration or a next stage of technology development.

And I think on the order of $10 million or so out of the 62 and a half million per year, which is really over 200 total, for the R&D, might be sufficient for that.

Now your question is if they're not forthcoming, what do we do, I guess. How do we trade. Again, I'm not playing God for the solar industries on this.

If the efficiency people refuse to accept the DSM value of PV and no funds are to cross over, they are going to be some very hard choices that are going to have to be made, in my presentation especially between solar thermal electric parabolic trough and the PV commercialization plan.

But as I said, I do see movement in PV in other areas of the country. I point out in my testimony we have renewable portfolio standards for solar only, having been introduced in Arizona, and a renewable portfolio standard have been introduced just now in New Mexico, states with very high solar insulation. And we can expect market stimulus from nearby states which would help us.

PRESIDING COMMISSIONER MOORE: Jan.

COMMISSIONER SHARPLESS: Yes. Thank you.

Well, Don, I have a lot of questions, but I'm not quite sure what to ask you. It seems to me that what you focused on is not necessarily an allocation mechanism or some of the other detailed issues that I'm inclined to ask you.

But what your testimony basically is today you've done an evaluation of what you consider in this very specialized area what a dollar need might be. That of course raises the question that goes back to the detail.

You must have come up with the dollar detail by having some idea of how the money would be spent.

DR. AITKEN: I do.

COMMISSIONER SHARPLESS: I apologize. I haven't read your proposal, so I --

DR. AITKEN: Okay. I've given you the numbers already --

COMMISSIONER SHARPLESS: Yeah. I know what the numbers are.

DR. AITKEN: -- to the extent they're numbers, yeah.

COMMISSIONER SHARPLESS: I don't know what you're going to spend it on. I mean I know you're going to spend it on PV. But I don't know --

DR. AITKEN: Well --

COMMISSIONER SHARPLESS: Right?

DR. AITKEN: Yeah.

COMMISSIONER SHARPLESS: But I don't know what about PV you're going to spend it on. It sounds like existing technologies.

DR. AITKEN: No, no, no. Not for PV, not at all for

PV.

PV has a commercialization plan which really is leaning on new funding that will be proposed.

I am not authorized to stand here and make the presentations on behalf of each of the individual solar technologies. I am part of the PV group. I am part of that group that's been making the decisions and putting the analysis together that will be presented --

COMMISSIONER SHARPLESS: So --

DR. AITKEN: -- to this group. And that will have the particular numbers.

It is my understanding that each of the solar technologies will be presenting --

COMMISSIONER SHARPLESS: Right.

DR. AITKEN: -- the particular numbers to you.

My conclusion, however, is the sum total of those numbers is going to be more than you've got. And then the question is what do you do with it.

And I simply said, "Look, I believe if you step back and look at the intent of AB 1890 and the best way to spend these funds, I think it can work."

And I'm trying to provide you with a framework on which to analyze those details.

COMMISSIONER SHARPLESS: Well, that's the problem I'm having. I'm not sure what --

DR. AITKEN: I'm sorry.

COMMISSIONER SHARPLESS: I've got the end result. I've got a dollar amount. I'm not sure about the framework. I don't know how you got to the amount of money that you're suggesting might be the level, the bare bones level, the 18 percent that you would recommend the Committee consider. I don't know how you got there. I don't --

DR. AITKEN: I can help you with that.

COMMISSIONER SHARPLESS: Oh, good.

DR. AITKEN: The hundred million for PV is a figure that has been before the PV group. I don't know the final figure that will be presented, but it was a working number, as recently as a week ago, that I subscribed to, that I believed in. So that's where it came from. It was a broad coalition of the PV industry. That was the day after our --

PRESIDING COMMISSIONER MOORE: Don, let me try something for a little bit. Let me see if I can slide in behind Jan.

COMMISSIONER SHARPLESS: Everybody wants to help me. So go ahead, Michal.

DR. AITKEN: I think I can give you, because I have numbers --

PRESIDING COMMISSIONER MOORE: Hang on. If you said you had a hundred million dollars and you said $25 million was going to get spent on new hardware and $30 million dollars was going to get spent on new silicate designs for wafering, and then 10 more million was going to be put into the arena of new film technology, --

DR. AITKEN: I understand.

PRESIDING COMMISSIONER MOORE: -- etcetera. I think what Jan's looking for is a macro breakdown. You've got a hundred million dollars. Is it going into hardware. Is it going into people. Is it going into software that lashes them up in peak load with circumstance --

DR. AITKEN: I understand the question. And actually for PV I know the answer, but I'm not making the presentation on behalf of the PV folk. I'm feeling awkward about giving out the numbers that will be appearing in other presentations.

In the case of PV, you will see a serious attempt to combine strategies with some customer incentives and some incentives to the industry -- these are each different amounts -- to try to drive the volume of sales. And the focus on PV is a commercialization plan that focuses on volume of sales rather than the technology development per se. That's why it's a commercialization plan.

In the case of the parabolic trough, I am aware that they had determined that they would need approximately 10 percent of the 540 million, or 54 million. And the figure that I believe we could get out of this is very close to that, so that's where that number came from.

And that's entirely for existing. So breaking it down between existing and new, I'm about 50 million existing and a hundred million new. But 50 million of the new is going to need to come from other directions. And that's how I'm proposing --

COMMISSIONER SHARPLESS: Can you be more specific about other directions? Other --

DR. AITKEN: The efficiency, the 872 million for efficiency and conservation --

COMMISSIONER SHARPLESS: Oh, you're talking about revenue streams then.

DR. AITKEN: I'm talking strictly about revenue streams. And I repeat, I'm aware of a lot more numbers than I'm even saying right now. There's been a great deal said in confidence. There have been telephone calls, faxes all over the place.

I am uncomfortable presenting numbers that are still in negotiation among the industries themselves at the level of detail you're asking for.

PRESIDING COMMISSIONER MOORE: Well, let's relieve you of that responsibility, because we know others will be coming up with it.

And you want us to stay on the --

COMMISSIONER SHARPLESS: Right.

PRESIDING COMMISSIONER MOORE: -- plane of the structure.

COMMISSIONER SHARPLESS: So given that, tell me again what you're bottom line is, Don.

DR. AITKEN: I believe the bottom line is that if the industry proposal that will be presented to you by biomass, geothermal and wind comes in having focused on, let's say, 81 percent of the total funding available, and recommending of the order of 18 percent left over for solar and possibly one percent for other. If such a proposal were to come in, we, the Union of Concerned Scientists, could subscribe to that in the belief that that could also support a viable solar technology component. It could truly represent all four of them.

And we are prepared to join that coalition under that condition. And it's not a matter of disagreement or dissent at all right now. It's a matter of just working out the details.

I thought it was really important to put before you that we believe that framework can work.

And you recall last week I've said, and I've said before, the 540 million is a fantasy number anyway. It's designed not to work according to any of the criteria that we're dealing with. So we're trying to squeeze toothpaste back into the bottle.

But I'm not prepared to support a circumstance whereby if a coalition of three of the technologies come in and indicate here's the specific funding levels they need for a specific technology advancements or applications, and then a fourth solar comes in, and here they are and you add them all up, and they're considerably over a hundred percent, I'm not prepared for you to conclude then we can't do them. And I'm not prepared to have you folks arbitrarily cut 10 percent out of each to make them work, because I don't think that's the right way to do it.

I think it has to respect the best expenditure of the funds within the technologies, which means respecting the technologies themselves, the abilities to say, "This is our bottom line."

I hope I'm being clear.

COMMISSIONER SHARPLESS: Well, it's almost as though I shouldn't be asking you these questions. Perhaps I ought to be asking these questions of the folks who are putting the solar PV proposals forward later today or soon.

PRESIDING COMMISSIONER MOORE: Soon.

DR. AITKEN: I believe it will be appropriate for you to query them on whether their proposals can work in this kind of framework that were put in front of you. Because if it adds up too much or if you just sit there after today -- well, it won't be today. You're not getting all your numbers today. You're going to get them on the 26th, unfortunately.

If you sit there on the 26th and add them all up, there you are, more than a hundred percent, and you're going to have to start asking hard questions.

And you are correct. They are the ones you should ask the questions of.

PRESIDING COMMISSIONER MOORE: Thank you, Don.

We'll be --

MR. ALVAREZ: Michal, I have a couple of questions.

PRESIDING COMMISSIONER MOORE: Yes.

MR. ALVAREZ: Don, can I ask you --

DR. AITKEN: Yeah.

MR. ALVAREZ: -- a couple of questions because I just want to get some clarification and perhaps some opinion from you about how you see this intersection here between the renewable, the emerging technologies and the Energy Commission's R&D activity.

DR. AITKEN: Yes.

MR. ALVAREZ: I guess as I read that portion of the legislation, I see a conduit between those two, some conclusion coming out of R&D before the emerging renewable technology actually receives funding. Do you also see it that way or do you see another kind of relationship?

DR. AITKEN: Absolutely, absolutely. Yes. And I'm also a party to the R&D workshops and was in the R&D working group for the PUC.

There's a strong connection between there that will have to be defined, but there's not going to be a major flow of funds from R&D that really commercially jumpstarts these things. There will be a trickle of funds that may make an important demonstration project and help attract investment funds as a result. But I don't see a strong -- R&D as a strong source of funds for the real commercialization.

We're talking about real commercialization: Reduction of cost four years from now, or 2002. Here we are, guys. And there are new market sectors that are open. We can really go after them without assistance. And that's why we need to concentrate on those, those commercialization plans.

PRESIDING COMMISSIONER MOORE: Jan.

COMMISSIONER SHARPLESS: Yeah. I --

MR. ALVAREZ: Okay. I have one more.

PRESIDING COMMISSIONER MOORE: I'm sorry.

MR. ALVAREZ: The other item came up I guess as part of a definition discussion in our first hearing, the definition of emerging, and this issue of significant commercial potential. And I guess I'm looking for what hurdle do you cross to determine significant commercial potential, as you're working in the emerging technology category.

DR. AITKEN: Well, PV has a very well defined target that will be presented. And if the PV folk will forgive me for giving one more number here, the $3 per watt, installed watt has been a magic number that the industry has been driving toward consistently now for several years with major help from SMUD, but also exports and other things.

What happens at the $3-per-installed-watt figure, and I know it's difficult for you guys to use that instead of cents-per-kilowatt hour, but it opens up a market that could be as low as 8 cents per kilowatt hour retail level for PV on roof-mounted systems. And it opens up a market that has been estimated to be several thousand megawatts for T&D, or transmission distribution grid support applications that are fully viable at that level.

And so a PV commercialization plan that targets that specific number and that says this is how we're going to get there and this is what it takes, truly opens up orders of magnitude larger market than it now has.

MR. ALVAREZ: Okay. Thank you.

PRESIDING COMMISSIONER MOORE: Jan.

COMMISSIONER SHARPLESS: Yes. I failed to ask you. When you were identifying your revenue stream sources, the 1890 fund -- and, excuse me, the renewable fund and the energy efficiency fund, you failed to mention the funds that would be coming from the municipalities.

Did you see them as too difficult to work with, too spread out, not a good source of funding for the project, or what? It's not a concrete number?

DR. AITKEN: None of the above. Did not assume the munis. And that's actually a very good question because the full expectation is the munis will be in there with a systems-benefit charge that was set according to criteria that are actually in the bill. There will be funds coming in from them.

I don't know as I stand here how they're going to be distributed among these categories.

If additional funds were to come into the renewables from munis, and we have -- I forget the number, muni folk have to tell me, at least 20 percent, maybe 30 percent of California electric is munis, that could be a very significant addition. And could allow for the higher funding levels that I believe would be appropriate, certainly in solar.

So anything that would come in from the munis would supplement this. In essence, I'm giving a worst case or an IOU-only case. I did not even mention the munis in it because I simply didn't know what to do with it.

PRESIDING COMMISSIONER MOORE: Marwan, have you got something you want to ask?

MR. MASRI: Yeah.

Don, you mentioned that $50 million for parabolic trough could keep them viable. And the question is: For how long?

And this is a question that we're struggling with: How do we determine that if you give money to some technology it will actually make it viable?

So if you explain to us what you mean by "viable." Only during the time that it receives money or beyond that time. Does it come from cost reductions, opening new markets or what?

DR. AITKEN: Yeah. I will have to confess that I have not seen the breakdown of what was actually the $58 million estimate made by the solar thermal -- parabolic trough technology and why they felt they needed to go into that particular amount of funds, and I respected that. But I do not have the breakdown and cannot answer your question.

It's a good one, though. It's clearly focused on the existing technology.

I do comment in my writing that I say that the existing technology I do not see as viable unless -- and I have not brought this up until now -- it's under conditions of hybrid application, where there is a significant fossil fuel component to the hybrid project, then that makes a major difference in the cost-effectiveness of the existing solar thermal electric technology.

And it's not clear to me that that's been taken into account in their proposal.

I'm sorry. I don't know more details about it than that.

PRESIDING COMMISSIONER MOORE: Fair enough. Thank you, Don.

DR. AITKEN: Okay. Thank you.

PRESIDING COMMISSIONER MOORE: Appreciate it.

All right. Mr. Judd, Mr. Hinrichs and Ms. Rader.

MR. JUDD: Commissioner Moore, Commissioner Sharpless, my name is Bob Judd. I am representing the California Biomass Energy Alliance. And in this presentation I'm speaking on behalf of the American Wind Energy Association, the Geothermal Energy Association and the Biomass Energy Alliance.

What I would like to do is give you an overview of where this industry coalition stands and the principles on which its proposal has been built. We will present you on the 26th with yet a further detailed proposal that includes a suggested allocation of renewable resource funds allocated by AB 1890.

You have requested in prior meetings that interested parties submit written proposals for the implementation of the provisions of 1890. And you've encouraged parties to work together to achieve consensus where possible.

In response to your request, the biomass, geothermal and wind industry associations have worked together to form a common proposal. These industries together represent approximately 90 percent of California's renewable energy generation and it represents the companies that are responsible for that generation.

In our proposal on the 26th, we will itemize the companies that are involved in support of this proposal.

You should know that it represents approximately $6 billion in investment in California, and it represents approximately 3,000 megawatts of current generation in the state.

Before we respond to the extensive list of questions that have been posed by the Commission -- and we look for your guidance as to whether you want to hear the Q&A now or in some other format during the course of the day, we're ready to respond to any and all questions now -- we'd like to note that this proposal does a reflect a serious consideration of the ideas and suggestions made in workshops to date. And it does incorporate those ideas that we believe will effectively fulfill the intent of 1890.

While the parties to this proposal have committed to the essentially parameters of a joint proposal, all of the details are not yet settled, given the large number of parties and the limited amount of time.

We would note that this is should be considered a work in progress at this point, but in fast forward progress with a conclusion and presentation within the coming week.

Our proposal aims to bring the various renewable related elements of AB 1890 together into a cohesive whole that will successfully transition the renewable energy industries to a point of market readiness in the year 2002. Consequently, it proposes a vision that is consistent with AB 1890.

We believe that it meets the intent of AB 1890, that public funds be used to support California's existing renewable resource base and encourage new development. And our proposal will fulfill the requirement that no less than 40 percent of funds be used for existing and no less than 40 percent of funds be used for new and emerging technologies.

Our proposal recommends an efficient use of funds which maximizes the generation of renewable kilowatt hours and in-state benefits. It puts in place a permanent structure for an aggressive renewables marketing effort directed jointly by the renewable industries, which have the most to gain from the successful development of customer markets and the most to lose if these markets are not successfully developed.

It allows each renewable industry to use a portion of available funds to fashion a plan that is well suited to its unique needs and circumstances and which will position that particular industry to survive in the post-2001 market.

The proposal also includes several mechanisms for promoting customer markets for renewables, informing customers about effectively using their purchasing power and encouraging power marketers to include renewable energy in their portfolios.

There are a few premises and principles that thread their way throughout our proposal. The first is that a recognition is a recognition that each renewable resource and technology has a unique set of needs and circumstances, as we've discussed before the all-size -- one-size-fits-all remedy simply does not fit reality when you look at these various industries.

In order to develop tailored mechanisms for each resource and technology, it is therefore necessary to first allocate funds by resource category. And we will present that to you next week.

All of us who have been in these extended discussions since the last Committee meeting, have put forward lucid and sometimes not-so-lucid arguments as to why its category deserves a larger share of funds than the other guy's category.

The proponents of the plan, however, recognize that available funds are insufficient to meet the needs of all resource categories. In order to forge a consensus that will allow us to move on, each of us has therefore entered into difficult negotiations within our industries and with other participating industries, and have agreed to an allocation formula that is lower than what is required to meet the needs of each of our industries but which is reflective of reality and fair to all, given the limited funds.

An important tenet of our proposal is that California's existing renewable resource base should be maintained and improved. Maintaining the current renewable industry infrastructure makes more economic sense than trying to rebuild it later.

The Legislature did not intend that all mechanisms identified in AB 1890 for supporting renewables necessarily be utilized. Rather, it directed the CEC to recommend the most appropriate mechanisms. We will offer to you the mechanisms that we believe are most appropriate for your consideration, within each of our industry groups.

The production of renewable energy in California, as you know, has declined in the past two years as a result of the unique uncertainties caused by restructuring and combined capacity and short -- excuse me, combined capacity and short run of cost payments that are significantly below the utility's average cost and are not sufficient to sustain the operation of many facilities.

A significant portion of California's existing renewable resource base is still at risk. In implementing AB 1890 it is therefore appropriate to place significant emphasis on protecting the existing base of renewables' investment and the associated industry infrastructure that accompanies it.

While AB 1890 provides for some supportive emerging technologies, we believe the dominant emphasis should be on preserving and expanding California's existing resource base, which provides direct, immediate benefits to California consumers including environmental benefits, fuel diversity benefits and local economic benefits.

Support devoted to emerging technologies should focus on those well along but clearly established commercialization path with an identified target for 2002.

Further, we believe there is the potential that a significant market for renewables may be created by consumers who wish to support renewables and their associated public benefits with their purchasing dollars.

Our plan includes -- our proposal includes a plan to aggressively develop that market. Yet we recognize these markets, consumer response, is as yet undeveloped and will take time to develop, will have high transaction costs at the front end. And we recognize further there is significant uncertainty regarding their ultimate potential.

So we will recognize them. We will recommend devoting funds toward them, but we will also recommend that we do not dilute the existing base, the asset base, if you will, the wealth of California, the investment portfolio of California in order to take any speculative risk on a program that has not been built up step by step.

Given this set of premises and principles, our proposal is to do this: To allocate total funds among the resource categories and allow each resource category to propose a funding method, funding allocation methodology that suits its particular needs and circumstances.

These methodologies for different resource categories may include an interest-free revolving loan fund to support new development, customer rebate program, production incentives, other methods that you will hear from each of the technologies groups next week.

The second element of our proposal is the development of a self-supporting, renewables-industry managed certification program and an industry-directed public education and marketing program supported by a modest amount of AB 1890 funds.

Finally, we will propose to give all consumers the ability to support renewables in a variety of ways, including the use of utility bill inserts and other informational outreach efforts.

We have provided in our written testimony answers to many of the questions that were raised with a promise that answers to the other questions will be included in our complete proposal next week.

Myself and my colleagues are willing to address any questions you might have now about the overview presentation or specific elements of our proposal.

PRESIDING COMMISSIONER MOORE: Before I open it up to questions up here, let me just turn to Ms. Rader, Mr. Hinrichs, and ask them for their comments. And then we'll be able to direct questions to all three of you.

MS. RADER: Good morning. My name is Nancy Rader, with the American Wind Energy Association.

We concur with the comments of Bob Judd. I'm prepared to go through our answers to each of the questions at this time. I'm not sure if that would be a little tedious or not, but I'm prepared to go through each of the questions and explain how we've answered them.

PRESIDING COMMISSIONER MOORE: I've not read the document that's in front of me. Does this document address those answers?

MS. RADER: Yes.

PRESIDING COMMISSIONER MOORE: So I have them in print already. I tell you what, just as a working plan, let's try and get the testimony up to us. And we may be able to devote just a block of time, read these things through at lunch. And then it might be more constructive to either ask for gaps to be amplified as a result of that or ask for a fuller presentation.

So if you have any overview comments right now, this is probably the time to do them. Otherwise, you can let Bob's testimony stand and then we'll go for some overview questions.

MS. RADER: I'll do the latter. Thank you.

PRESIDING COMMISSIONER MOORE: Thanks.

MR. HINRICHS: Tom Hinrichs representing the Geothermal Energy Association.

And I would just like to state that the Geothermal Energy Association is truly desirous of this consensus development coming together. We have one organization of the solar thermal people that aren't quite with us yet, but I think with some more time that I feel pretty confident that that will come about.

I would want to say for the geothermal industry, that our focus will basically be upon new type of development. And the things that Bob mentioned, of a revolving loan program that would be interest free, where the money came back in, and a customer choice program, are ones that we have discussed relatively specifically in the geothermal industry and are preparing more specific comments and ideas about that.

Our real desire, all of us, is as we move forward to bring more and more people into the consensus. And it's going to take a while to do that, but it's moving quickly. And I would hope that part of that could be done today, and before we meet next Tuesday, that we'll be much further along on that.

PRESIDING COMMISSIONER MOORE: Good. Bob, let me direct a couple of questions to you now with regard to your presentation.

First of all, if I go back to the numbers that Don Aitken was talking about, do I assume that this proposal in its current form would consume about 81 percent of the available funds; is that the number that was tossed out and is that accurate?

MR. JUDD: That number is not fully settled, Commissioner, but --

PRESIDING COMMISSIONER MOORE: Am I in the right range?

MR. JUDD: -- in the ballpark.

PRESIDING COMMISSIONER MOORE: Okay.

MR. JUDD: On that, we have, as I may have mentioned to you, representatives of each of the industry groups have been meeting intensively for two weeks on this. We are very close amongst ourselves. We are hopeful for further dialogue with our solar thermal friends.

And we would like to use the week between now and next Tuesday to talk to other parties who are not generators, to make sure that they understand and --

PRESIDING COMMISSIONER MOORE: So somehow in deriving the 80-percent number, if I'm in the ballpark, and for our purposes today that's probably all that matters, is that we've got very rough macro targets, you in your own mind are allocating a fifth, roughly to the solar industry? You had some --

MR. JUDD: To --

PRESIDING COMMISSIONER MOORE: -- construction in your mind that their needs would be accommodated by that, I'm assuming. And did you anticipate the kind of framework that Dr. Aitken developed, that would pull funds in a cross-over from conservation or from R&D?

MR. JUDD: We did not anticipate Dr. Aitken's comments, although they seem sensible.

One of the ongoing, unresolved discussions in our group is the appropriate recommended allocation level for the various types of solar technologies and other emerging technologies.

PRESIDING COMMISSIONER MOORE: We heard something earlier from the Sierra Club about the need for an environmental analysis of all of this. I'm not going to put you on the spot about whether it's a good thing or a bad thing. Just to ask: Is there or was there in your discussions a component that was directed toward ongoing mitigation analysis or evaluation of environmental factors?

MR. JUDD: There has not been a discussion about that amongst the industry groups.

I believe the presumption is that for the large proportion of the participants in here in production facilities, that some of the issues raised by Dr. Ferguson would represent inefficiencies that would make them less competitive. And they would therefore be compelled internally to remedy those situations.

This is the first we've heard of that. And I'm not sure that the premise that there are significant problems within the wind industry or any of the others is founded as much on fact as it is on anecdote.

PRESIDING COMMISSIONER MOORE: Then, lastly, at least for right this minute, you suggest that there would be an industry sponsored group that would view the ongoing analysis of certification.

MR. JUDD: Yes.

PRESIDING COMMISSIONER MOORE: And what I guess I envision is the idea of 501(c)(3), like some nonprofit group, that would have directors drawn from across industry, perhaps government as well?

MR. JUDD: Yes. We, I think in our broader testimony, we didn't get as specific as a 501(c)(3), but that's what we have in mind. And we also had in mind oversight and participation by the Energy Commission and perhaps other appropriate state agencies on that.

PRESIDING COMMISSIONER MOORE: Well, that's in preference to having this Committee, for instance, just to use an example, be the ongoing machine that does renewable -- renewing of certificates?

MR. JUDD: That is our recommendation at this time, but we would certainly discuss the appropriate role that you felt was appropriate for the Energy Commission in this.

PRESIDING COMMISSIONER MOORE: Okay. Jan.

COMMISSIONER SHARPLESS: Yes. Bob, I guess my questions I'm going to give today -- and maybe they'll make an impact for what we get on the 26th.

If the groups involved are still discussing parts of the proposal, I think one question that's going to be essential for this Committee to decide whether or not the amounts meet the criteria of the law or how you came up, in the first place, with the breakout to the various industrial -- or technology groups.

And I don't know what information you intend to provide to the Committee, but I think your comments indicated that the amounts are less than you think the industry would need in order to be totally fill-in-the-blank, viable? competitive? What word would you use? Or did you just stop at "need"?

MR. JUDD: I don't think I use the word "viable." I'm a little careful with that word.

COMMISSIONER SHARPLESS: What word would you use?

MR. JUDD: I would clarify it by saying that the funds that will be available through this 1890 allocation have benefit to the industries conditioned upon other conditions, under current conditions with a low SRAC and low gas prices, the need is higher. If SRAC were to go up, the funds could be distributed in such -- in a different allocation.

COMMISSIONER SHARPLESS: But aren't we dealing with this situation in the next four years, where SRAC is going to continue to -- or at least natural gas prices are going to continue to be low and drive those prices?

MR. JUDD: We just don't know.

COMMISSIONER SHARPLESS: So I guess I get back to the question of how do you determine how much money needs to go to what technology, and what is the basis on which you made those decisions. And the information that you provide the Committee, I think, will be very important and useful to determine whether or not we think we're close to the mark.

Do you agree, Michal?

PRESIDING COMMISSIONER MOORE: I think that's right. We won't know the answer to that, of course, until you come back.

MR. JUDD: Right.

PRESIDING COMMISSIONER MOORE: Can I just take off on the edge of Jan's question that -- and I'm not sure that you came back on -- and that is were you saying that there were some industries in this that would be not brought up to funding levels but would survive, they were still viable? We're back to the triage that we talked about.

And some that they weren't going to come back up to funding levels, and they simply weren't going to survive. There will be nonsurvivors in the process?

MR. JUDD: The target of the proposal that we put forward to you for the biomass, geothermal and wind energy industries is to bring them to market readiness in 2002.

PRESIDING COMMISSIONER MOORE: They're all survivors?

MR. JUDD: The is our objective.

PRESIDING COMMISSIONER MOORE: Every member, every player in each one of the component pieces is a survivor?

MR. JUDD: No, -- well. No, no. That is couched the wrong way.

There will be competition among these facilities to demonstrate that they can remain viable at a market condition.

In our industry, for instance, it's incumbent upon us in working with the Energy Commission and Cal/EPA to deal with this fuel problem that we have. We have a cost problem. And it is incumbent on us to get there. If we can't solve that problem, which we do intend to solve the viability of some of our biomass plants, remains a question.

PRESIDING COMMISSIONER MOORE: Could we just stay with that for a second?

If we assume that this Committee, this Commission, were absolutely committed to biomass and to solving the fuel cost problem, and for argument we said, "You know, the answer to this is a county tipping fee, a county-based tipping fee. And it ought to be mandated" -- I'm not trying to put this illustration in the position of going for -- against home rule.

But let's just say that for argument they say, "You know, this is a case where statewide presence ought to be felt." So we impose a countywide -- county-based tipping fee, or we attempt to, and it fails. It fails in the legislative process. But we built part of the allocation in this agreement that you're just putting to us, we built part of that on the idea that this is a good idea, but it needs an external event that we'll support but we can't control in order to make it viable.

What would we do then? How would we -- here's an industry that we've committed to, believe in, but we failed to get the external support that we needed, through no fault of our own. What do we do now?

MR. JUDD: The question of the method for shifting the fuel cost is one that we deal with quite a lot with as well. We believe there may be the need for different mechanisms for different sectors that supply fuel to us. And we expect them to come out during the course of the activities over the next six months with the Cal/EPA study and in colleague -- it's a problem we do have to resolve.

For the biomass industry, absent the cost of fuel in our industry, the biomass is very much like the wind industry and the geothermal industry in its cost basis.

PRESIDING COMMISSIONER MOORE: Well, Bob, let's just think the unthinkable here for a second. And that is we go down that road, and six months from now we've allocated a set of funds as a portion of a broad agreement directed towards biomass. And none of the Cal/EPA efforts, none of our best legislative efforts come to fruition. We just failed. The industry, given a projection of costs and revenues, can't make it.

What would we do? Would we come back and say we gave it our best shot and we need to reallocate those funds now? Or would we simply leave them with the decision that we've made? Would we revisit it, reluctantly, but would we revisit it?

MR. JUDD: We would possibly revisit it.

There is a significant tension in that question, because when you consider specifically the biomass industry and the question of “If we don't get a method, what happens to it?” it's not only the power plants you're talking about, but it's the externalities and it's the new costs that would be transferred to society if this outlet weren't there.

So we are hopeful, as we believe the administration is, that we can find a mechanism. We're banking on finding a mechanism, because it is the right public policy choice to find a mechanism.

PRESIDING COMMISSIONER MOORE: Okay. You've the left the second part of my question unanswered, and I understand that you have. But you understand that when we go through and we finally devise a scheme, that's going to be on our mind, the back end. And what do we do if something that depends on a cross-subsidy, has the potential to fail, we have to ask ourselves the question of what would we do if it did. We're going to have to build that into our report.

So what a tremendous effort you guys have made. That's very impressive.

MR. JUDD: Thank you.

PRESIDING COMMISSIONER MOORE: And I look forward to seeing your numbers on the 26th.

Now will we see anything in the interim? Will we see projections or are we just going to wait another week and we'll see it in one lump?

MR. JUDD: I believe on the 26th is when you may see it. We're meeting with other interested parties to this discussion in the interim.

I would tell you that among the renewable generators represented in the proposal that is put forward here, there is no disagreement among the proposal that will come forward to you. We are very close. We are not arguing with geothermal about whether geothermal should --

PRESIDING COMMISSIONER MOORE: I think Jan has some questions so I'm going to come back to her.

But let me just say that one of the ways when you've got this more explicit proposal together, that we might be more helpful to you in the hearing on the 26th, is if you could deliver them to us the night before, so that we at least get a chance to peruse them. Our questions might be a little more focused, if we can do that. It's unreasonable to say much before that, but if we could, if they're in print the night before we'd like to see them.

MR. JUDD: We can do that.

PRESIDING COMMISSIONER MOORE: Jan.

COMMISSIONER SHARPLESS: Yes. I guess this is an anticipatory question as well. How much of a developed proposal are you going to bring forward to the Committee regarding green price and green marketing? And is that going to be technology by technology or is it going to be a proposal that would apply across the board?

MR. JUDD: Would you care to answer that?

There's kind of two answers, two parts to that. There's what the industry has, and we are trying to coordinate very well with other parties who have spoken to you on green marketing on --

COMMISSIONER SHARPLESS: Okay.

MS. RADER: I guess I'd say that we're definitely looking at any industrywide, generic campaign to promote renewables in the customer markets. But that in addition to that, each industry may have a component that involves customers.

But we want to do is to create a generic marketing effort similar to the agriculture boards that promote their product on a generic basis, because it really takes, when you have a bunch of small independent producers, it takes a combined effort in order to overcome some of the transaction costs that each individual company faces.

COMMISSIONER SHARPLESS: Are you going to try to put a number to that and make it a part of the 81 percent or is it going to be on top of the 81 percent?

MS. RADER: We'll propose that a small fraction of the total funds go to a generic marketing effort directed by the marketing board in cooperation with the Energy Commission.

COMMISSIONER SHARPLESS: And I guess what I heard you say is the answer, you're working with some other folks so the amount of detail that we might have on the green marketing program depends, I guess, on who you're working with?

MS. RADER: Yeah. I mean I think the elements are included in this, in the answers here today. That we have thought through the kinds of things we think the marketing board should do. And we'll probably flesh that out a little bit, but I think that's really the job of whoever inherits that job. We're not in position today to say what the best way to reach customers is. That's something that we'd need to learn through that marketing effort.

COMMISSIONER SHARPLESS: Well, are you going to attach a dollar figure to it --

MS. RADER: Yes.

COMMISSIONER SHARPLESS: -- by the 26th?

Do you have a dollar figure now?

MS. RADER: No. It will be, I think, in the range of one to two percent of the total funds.

PRESIDING COMMISSIONER MOORE: Rosella.

MS. SHAPIRO: Nancy, is this separate, your marketing program is separate from -- in this proposal, this Item (c), Principle C, to give customers the ability to support renewables in a variety of ways using utility bill inserts?

MS. RADER: They are linked. I would say that we see that utility bill insert as a very important way of reaching consumers and overcoming the incredible transactions costs that we're going to face in reaching every single residential consumer.

So the way I think we are thinking of it is that the bill insert might be designed and paid for by the marketing board but that the utilities would be required to carry that insert in the bill, so that the efforts are linked.

But there's a distinct element in AB 1890 regarding the use of the utility bill. And so that's sort of what we're calling out in number (c).

COMMISSIONER SHARPLESS: Does your proposal have any kind of CTC rebate?

MS. RADER: The proposal as a whole doesn't, but some of the industry-specific proposals may.

PRESIDING COMMISSIONER MOORE: Marwan.

MR. MASRI: Commissioner Sharpless just asked one of my questions.

The other question I had is in the allocation you are proposing, is there an allowance for -- and I haven't read your proposal yet -- hydro power, landfill gas or any other technologies besides solar that were not part of the negotiation?

MS. RADER: Yeah. We are proposing that hydro power obviously be included in the definition of renewables, but that it not be included in the subset that are eligible for funds, and that's because we don't believe that there's been a demonstrated need for those resources. We have yet to see anybody from the hydro industry in any one of the proceedings that have been going on for the last two years.

So, and then the landfill gas is a question that we sort of put in an open manner in our document. And the question is whether funds directed towards landfill gas would, in fact, increase the amount of landfill gas given that local governments are already required to collect gas at landfills. And the incremental cost then of generating electricity we believe may be at market levels, but we haven't come to a firm conclusion on that.

PRESIDING COMMISSIONER MOORE: Thank you.

I'm going to try and take two more people before lunch and then we'll break. I'm going to ask Dan Kirshner to come and speak to us and I'm going to ask Eric Miller to speak to us. And then we'll take a short break for lunch.

And I should remind everyone, if you want to talk to us, that we have -- Carrie has the blue cards at the back table. We'd appreciate it if you'd fill them out. Give me a little bit of a hint where you're going on the cards so I don't look so awkward when I'm trying to make sure everyone stays in sequence.

Dan.

MR. KIRSHNER: Thank you. Dan Kirshner with the Environmental Defense Fund.

I'll be brief. As you know, EDF submitted its proposal on November 4th. And EDF's proposal was previously fleshed out in the California Public Utility Commission's Renewable Working Group Report.

The addition today is responses to your 17 questions, and those have been handed out. I still have a few additional copies if anyone needs them.

Again, our basic thrust is to provide a fair and efficient market-based mechanism for a subset of the allocation process, that is for new renewables, not the emerging technology band, although this may be applicable in those areas too, that we think has acceptance by a wide variety of market participants. And we believe there's a broad coalition, some of whom are represented by the sponsors of the proposal in the CPUC Renewable Working Group report, that have an interest in a fair, efficient mechanism, whose interest is not coincident with getting the money. It's coincide with the benefits of spending that money.

As I said, I'm going to be brief. I'm going to refrain from commenting on anything I've heard so far. I think the proposals are still incomplete.

But I would like to bring up some questions of process. As I understand, at least one part of the process here is to develop a range of mechanisms for dealing with the questions you are facing to see what ideas are available.

And I think the important point is to be able to explore the mechanisms and the justifications for the various mechanisms. And in my brief reading of things is many of the justifications still are not available to us, and I think given the brief time that shouldn't surprise us. But I'm wondering what we can to do to sort of help tease all this out, to develop some of this information. And I'm just wondering.

If the time is short -- it looks like we're looking -- and I don't recall the time. It looks like we're looking at

November 26th to hopefully get final details on some of these proposals. I mean we have an informal process here. We're not going to have cross-examination, God knows we don't have time for it. But I can imagine that you will have a number of questions of the posers and I imagine the rest of us will, too.

I'm wondering if there's some process whereby we couldn't pool these questions, perhaps to the Committee, maybe shouldn't I assign this task to you, but to cull them, consolidate them so we have a range of things that we can explore for all the proposals and try to understand how they do or do not fit together, what their justifications are or are not.

I don't know if you have an agenda item set aside for a future timeline, but even that process, I'm wondering, do we have time to do that? I defer to you.

PRESIDING COMMISSIONER MOORE: Yeah. Let me respond to that by saying that questions occur to us as we're reading the material or as we talk to people or hear testimony, clearly, and may not span the range of available questions that there are. And they certainly may not span the range of questions that are occurring to you in the audience.

If they come up, if there are things that you think we should be asking about but we don't appear to be, areas that are incomplete, that it looks as though if we don't delve a little bit further we're not going to have a complete base, really post them up to me, direct them to me and I'll make sure that everyone concerned gets a copy of them. And it will certainly start both of us thinking about the kind of things you think are deficient.

And you may or may not see them directly related out in the question you would ask, but you're going to certainly influence the way we think. So I would absolutely encourage you to write questions that occur to you up to us and make sure that we're aware of them.

MR. KIRSHNER: Well, I'm thinking of maybe a little more detailed process, whereby -- first, I have to wait until November 26th before I can formulate a set of questions. And then I'm not sure I want -- expecting off-the-cuff answers. This might be something people need a little time to think about.

I don't know if we can have some mechanism within the time constraints, but I would like to get something a little bit --

PRESIDING COMMISSIONER MOORE: Okay. Let me think about it. We'll do our best. We're going to caucus after this and go back over some of the things that we've heard, and that will be on our list.

I'm not prepared to give you an off-the-cuff "I can solve it," because I can't.

COMMISSIONER SHARPLESS: I would like to say to Dan, though, that Michal and I have considered the situation that if most of the detail comes in on the 26th, that there's going to be a lot of reaction to that detail. And the Committee would certainly profit from hearing the debate that goes on. What form that might take, I think is what Michal and I need to caucus on.

We have, as he indicated at the beginning, the month of December is in itself a compressed month given the holidays and given the schedule that we're trying to get something out by mid-January, you can see the difficulties we're facing.

We have planned to have Committee hearings after the workshops. That's going to have to be sandwiched in as well. So we will chew on this idea and try to figure out perhaps the most workable solution that we can come up with.

MR. KIRSHNER: Okay. Appreciate it. And I just did want to bring that up.

PRESIDING COMMISSIONER MOORE: Thank you. And unless it wasn't clear in my earlier remarks, we understand that we're consigning a good number of you to working through the Christmas holidays, so I apologize in advance of that as well, of course, so sympathy is limited.

But the point is we understand when the product, the physical written products are going actually be generated. And it's unfortunate, but it's right smack in the middle of the period when it's going to happen, so that further defines this time schedule that we're under.

Thanks, Dan.

MR. KIRSHNER: Okay. Thank you.

PRESIDING COMMISSIONER MOORE: Eric.

MR. MILLER: Thank you for allowing me to speak.

PRESIDING COMMISSIONER MOORE: You might identify yourself for the tape.

MR. MILLER: Yes. Eric Miller with Foresight Energy Corporation and also joined with me is Jody London of Working Assets Green Power. We're here today to present a joint proposal of our two entities for a customer-focused renewable energy incentive.

What I would like to do, given the hour, is give you an overview of the program we propose. We have specific answers to questions and would not address those line by line at this time, but would certainly be available any time this afternoon to do that.

PRESIDING COMMISSIONER MOORE: Do I have a copy of the --

MR. MILLER: You should. If not, we can get you one.

PRESIDING COMMISSIONER MOORE: Okay. Go on. I'll get it after you're done. Now I have one.

MR. MILLER: Very good.

Firstly, we and Working Assets share a strong belief and we believe that there's data out there, more of which is coming out all the time and which we will be providing the Committee, that supports a strong interest on the part of consumers to purchase clean energy.

We think they're ready. Everything that's been seen has shown that consumers have a very clear understanding of the hazards and the impacts of conventional generation. They understand the benefits of clean generation. And they're ready to make a choice. And it's not something that they will need to consider a long time if the proper package is presented to them and presented to them in a way that's practical for them to do something about.

Everything we've seen is that they're ready, eager and willing. And it really won't take that long to generate quite a large numbers of consumers that are interested. And I think we'd like to take some time at some point for Working Assets to describe their experience on the East Coast which I think has been validating that with some real live experience.

To create a -- right now we don't have -- this market doesn't exist. Obviously no competitive retail markets in electricity exist.

The things that are specifically required for this market to exist is, first of all, you need a competitive source of renewable supply. There has to be, available for consumers who want to purchase it, renewable energy at prices not necessarily at what they're paying -- not necessarily equal to the cheapest source, but prices that are within the range of the value trade-off that they are going to make.

And as I've described in some of the earlier workshops, we see that particularly for small customers, that because the commodity energy portion of their bill is relatively small, a fairly small premium by a consumer can generate a fairly large premium for the renewable energy supplier.

But it's sort on axiomatic. If you don't have anything to sell then we won't have anything that people can buy. So that's a key element that needs to be there.

And because of the particular situation of restructuring and existing SO4 contracts, that presents a somewhat, a unique issue in California.

There has to be someone out talking to customers, presenting them with viable packages that they can say yes to in a convenient and practical means. And therefore you have to have an opportunity for someone to do that. And I guess we don't see that some sort of state agency or other thing is likely in a competitive retail environment to probably be the most effective entity, either efficient or effective entity at doing that.

We think that you need retailers. Just as you need retailers to sell any other product to consumers, you need someone who's focused on the customer.

During the transition period, CTC and other market barriers really prevent just getting out there and doing this on our own at this point. And there needs to be some ability to lower those barriers during the transition period. We don't see those barriers being sustained after the transition period. We think at that point there's a viable and sustainable market. But given the high value expect for CTC we don't think we're going to get there without some assistance there.

And, finally, you need some market oversight to make sure, since we are differentiating electricity products on something other than price, people need to have some confidence that they're getting what they're being told they're getting. I think there's an appropriate role through certification and through, ideally even labeling or other mechanisms where consumers can have an idea of where any of their power comes from. Some ability for consumers to have objective and credible information to make choices between suppliers.

The mechanism that we propose today is what do we need -- or let me actually go back -- what do we need to get there. Well, what do we need in California specifically. We need contracts to be able -- we need existing suppliers to have the ability to sell into the retail marketplace, which on a practical level they don't really have today. And we need to do something about that. We need to create some very real options for them that they don't now have.

And we believe that the renewable funds can be best used to provide incentives for existing and new projects to enter that retail market. Specifically, I think as one common theme of all the presentations is that the 540, the funds here are simply not enough. There's just not enough here. And I don't think any of us can get around that.

And therefore, of course, we have to use them most effectively. And we suggest that one thing government -- and I think there's a lot of successful examples out there. When government has insufficient funds to do something it wants to do, to focus on providing incentives as opposed to trying to inadequately fund, be the funder but not do it adequately, to focus on how can we use that money as a carrot to leverage the broader industry into accomplishing the goals that it has.

I think a great example is the appliance -- the refrigerator efficiency program. There simply wasn't enough money out there to subsidize the incremental efficiency of every refrigerator in the country. So a number of groups got in -- and DOE got together and offered a $30 million incentive to the first company to come up with a technology breakthrough of efficiency in appliances by a certain date for the commercial consumer at market, and they got it.

And if you had tried to add, to fund the extra $50 a refrigerator, or even fund the R&D, $30 million wouldn't have gotten you very far. But as a result they actually got the industry to produce three or four different revolutionary designs.

And I think that that's a good model for these funds. These funds are enough to provide some significant incentives. They are not enough to provide the funding to really accomplish any of the goals we have.

So the first -- going into a little more detail now -- the first thing, as I said, is you can't expect to have renewable supply and you can't expect renewable suppliers, particularly existing ones, to enter the marketplace if they can't get out of their existing contracts in a way that recognizes that there is value to those contracts and that the projects were built on the economics of those values. And we're proposing two mechanisms to do this.

Now while these don't exactly fall within the 540, we believe that what the Legislature wanted the Commission to do is to come back with a program to come up with how to best support the renewable industry, and we think this is an important part of that program.

The first is that you'll allow existing contract holders who terminate or reduce deliveries under their SO4 contracts, to take the CTC that they were -- that is avoided by giving up their contract and allow them to take customer credits in return. That they would be able to take those based on the present value of their future capacity payments, and it would define a mechanism and also define that there would be a discount taken for that in recognition of the project being able to accelerate its capacity, some of its value.

Would also recognize that projects that are willing to jump and have the recovery of their existing contract value tied to the marketplace, first of all, should be encouraged to do so. And, secondly, recognize that they're accomplishing an important goal by doing that in helping to build the market, and that should be encouraged.

The second mechanism for projects where it's impractical for them to, in a sense, completely get out of their contract through the financing constraints or other things, is that in exchange for a discount in their capacity payment going forward, they would be not required to sell to the utility any longer but to sell to other customers.

And we think that those two mechanisms should provide virtually any project a practical mechanism to get out of their contract and get into the marketplace.

So with that as a component to -- that now creates the means by which projects can enter the marketplace. Now we use the funds to provide incentives to do that. So the funds would be made available to projects who are prepared and ready to enter the retail market. That would be a starting point.

We would provide credits that could be used by residential and small end-use customers to reduce their utility bills. And we focus on small customers because we believe that's where the sustainable market for renewables is going to come from.

Only certified renewable suppliers for certified projects could redeem those credits for the consumer. So again we're focusing on the -- the funds are targeted to consumers, who are going to be the base of a sustainable marketplace.

And the credits would be allocated to projects. This is something that we really struggled with, and come to the conclusion that the right way to do this is to provide the incentive in the form of a customer credit but provide the credits to the projects. And we would propose allocating those credits both by technology and also into new and existing -- new and emerging categories.

And we would vary the size of the incentive to the industry because we do agree that different industries are in different situations, and therefore to try to get the incentive to a level which will stimulate interest but still go as far as possible, it probably does make sense to target the size of those to different industries.

We would issue the credits on a first-come, first-serve basis. And we have more detail in the proposal about how to do that, but basically you would offer them as of a certain date and quarterly thereafter if they were undersubscribed. You would have specific technology categories.

After a certain point in the process, we said two years, but certainly open to discussion. If a certain category was unutilized, you might open it up to other technologies.

Someone to apply for that, apply for the credit needs to have -- be able to get -- needs to be demonstrating they're getting out of their contract and have the ability to sell in the marketplace. And they have to -- and once getting those credits, within three months have to demonstrate actual customers that are ready to go to use those credits. And if consumers could not -- if the project was not able to demonstrate that, then they would lose the credits.

And our focus is to try to provide a mechanism to make sure that the credits are going into the hands of people who actually can use them quickly, because they do have a shelf life. And they need to get -- if they're not going to be used, they need to get recycled quickly back into the system.

What we envision happening specifically is that projects would obtain these credits. They would align themselves with renewable marketers who would have customer base. And they would then together meet all of the criteria that are necessary to keep the credits.

In the new category we would allocate customer credits at a level sufficient to stimulate new construction. So that in addition to simply overcoming the market barriers, in my view, there's some additional support needed given the low prices in the marketplace today and the number of uncertainties. And so we would provide a higher level of support in order to actually incent some new construction projects.

In that case, for new projects, projects could pose security. By posting security, they could delay the start date or the ending date or both of the use of the credits, so that if, for example, there's a two-year timeline for permitting, a project could still be there first in line to get the credits, but recognize the realities of their construction schedule.

And we would target -- also use customer credits, but in the case of emerging technologies, provide them as a customer rebate on more of a dollar-per-watt capital basis to -- focusing really, thinking about PV as the principal application for that.

This is a -- and I don't want to stress -- example allocation [referring to display on overhead]. The distribution here, we've gone -- simply I've retained that the 40 percent, as specified in the legislation; 10 percent for emerging, which we just picked as a number, I think provides a pretty substantial -- particularly if it's targeted towards PV, a pretty significant incentive. Six megawatts a year is about 10 percent of world production, so to me that's a fairly good number.

Here I want to emphasize, these are just placeholder allocations. We believe that the broader interest community ought to get together. And we're ready to work with anyone to try to come up with the right allocation between industries, and also the credit rate.

These numbers are simply the base of existing -- the percentage by existing generation. And so please don't imply any value judgments in that. We just took some numbers.

The credit rate, we took a cut at the -- where those figures come from was for the technologies that are on a broad scale, fairly competitive. We provided an incentive which is enough to cover the costs of overcoming the CTC market barriers and still provide an incentive so that a project would be better off jumping into the market over the next four years than they would simply sitting with their existing contract.

In the case of biomass and existing solar, we increased the number because, as we understand, there probably would be a bit larger incentive required not only to get them to go into the market, but simply to maintain, to keep operating. That may be required.

And so we see that as a mechanism -- this is a mechanism that can provide those projects with the additional support they need and still allow them to contribute to the creation, and participate in and contribute to the creation of a direct access market.

New projects. Again, we simply did the 40 percent as specified by the legislation.

What you get based on those figures is that you can support about 500 megawatts, you can get about 500 megawatts of existing generation into the marketplace. You can get a little over a hundred megawatts of new renewables built. And that's based on a high capacity factor, a geothermal type of project. If it were wind, the number would be several hundred megawatts.

And we get about six megawatts a year of PV into the marketplace, which is a tremendous number.

And we get I think most -- very importantly, we get about 700,000 customers buying, actively buying 50-percent renewable portfolios. And this could all happen starting January 1, '98. And I think that -- and what's significant for us, this is enough. Used as an incentive, this is a real market. This is a market.

Where you've got 600 megawatts of supply out there, 700,000 customers, you're going to have multiple marketers, you can have multiple projects. You're going to have an infrastructure out there. People will have heard of this. They will be get -- and you'll have a real market.

I think this, at the end of four years, this is something that is going to be ready to grow much larger, and in a position to do so. And it will -- I think it will fundamentally will accomplish the goal of creating an industry.

I was just thinking this morning that back in 1983 in no small part this Commission helped launch an incentive to renewable energy to get into the market, that market. That mechanism was a standard-offer contract. At that time the market was selling to the utility. But the notion was: Let's put an incentive out there. And, in fact, nobody thought anybody would sign up for those. And no one had any idea that that would be successful.

And what happened, of course, in retrospect were the details all right? Of course not. But you got an industry that at that time wasn't in the market, the market being selling to utilities, and now was in the market. And it worked.

And I think here we are, 13 years later, the market has changed. And I think there's a historic opportunity for this Commission to do that again and to help the industry move into the new market. And I think this mechanism provides the means that we can actually do that.

PRESIDING COMMISSIONER MOORE: Thank you, Eric.

Jan.

COMMISSIONER SHARPLESS: Yeah. Eric, I think you just said it at the end. This program is a four-year program. It expends all of the money in that time in an effort to build a market; is that correct?

MR. MILLER: Yes. The one exception is that if a new renewable project elected to stretch out the customer credits past 2000, as long as they posted reasonable security, we think they should be allowed to do that. So some new projects could stretch out the money farther.

We would envision that all the money would be committed, however, certainly within the four years.

COMMISSIONER SHARPLESS: And even though you said this table is illustrative, you basically have 50 percent going to existing, 40 percent going to new, and 10 percent going to emerging as a hundred percent expenditure of $540 million, correct?

MR. MILLER: Yes.

COMMISSIONER SHARPLESS: Okay. What's happens -- I guess one question I have, would a project be able to get the customer incentive whether it was competitive or not? I meant what if a project that's competitive comes forward and wants this kind of incentive money, does it get it?

MR. MILLER: Our view is that the overall goal certainly of our program and what we would recommend is that creation of the market is the number one goal, and that any project that enters that market is contributing a valuable service to that goal. And --

COMMISSIONER SHARPLESS: So the answer would be yes?

MR. MILLER: Yes.

COMMISSIONER SHARPLESS: A project that's competitive would get it.

MR. MILLER: Right.

And I think, first of all, we certainly want to incent competitive projects into the market. I think if projects that might have a challenge later, first of all, I think this provides an effective means of keeping them in the market.

I believe that a project that can see its way into the market illustrates some survival skills that may make it able to figure out how to get there for the next four years.

And I guess from a pure retailer perspective, we believe out there, that if we've created a robust market, there will be new projects at economics competitive with what we're talking about, that if we did happen to lose a few at the end of the transition, we think those could be replaced because they would have demonstrated a viable market. So we feel like those projects have been assisted the broader industry, just by going into the marketplace.

And so we would propose not differentiating. Letting the decision to go into the marketplace be the criteria for support.

COMMISSIONER SHARPLESS: But you are in a way waiting, as well? You indicated that you have recognized that different technologies might be in different circumstances, and so you're suggesting that in different technologies, you have some kind of weighting system so that biomass, for instance, that has a particular fuel cost might have a greater customer incentive than one that has less cost to carry?

MR. MILLER: Yes. Yes. I think that's -- because you do want your -- if you're providing incentives, you want to make sure the incentive actually incents people to do it, so you have to --

COMMISSIONER SHARPLESS: How are you going to calculate that? Is that going to be the same for every biomass plant regardless of whether it's in better financial shape than perhaps others?

MR. MILLER: I believe that by focusing on incentives, given that there is -- we're explicitly recognizing that this is a carrot to get people to do something that has a broader leverage and success as opposed to supporting income or something else, you never get incentives quite right. And it's okay.

I guess I think of incentives maybe don't need to pass quite the same scrutiny that an actual support payment does. And it's appropriate that -- and I really believe that simply the projects that come forward and chose to jump into -- by having to make that decision -- I'm going to jump into the marketplace, I'm going to get out of my contract, I'm going to make my future in that new market -- that's going to sort out -- and also they have to get together with a marketer and actually have the practical means to deliver. But that's an appropriate screening mechanism.

COMMISSIONER SHARPLESS: Well, who and when would make the decisions on what was an appropriate incentive?

MR. MILLER: We would propose that be part of the Committee report.

COMMISSIONER SHARPLESS: Are you intending to work out more details along those lines or this is --

MR. MILLER: We certainly could provide more backup. We would like to work in a broader group with the industry to develop those. I mean I certainly have my own thoughts, but I think it would be ideal if there was a broad group of people that can contribute to that process.

COMMISSIONER SHARPLESS: What if the allocated money, the 50-percent money for existing didn't come up with 50-percent necessary projects; what would you do with the money? Or, likewise, with new and emerging?

MR. MILLER: I guess that would mean we got the incentive wrong, it was not high enough. And you might need to revisit -- no one took it. Then you certainly have the opportunity to revisit that and say, "Well, we didn't get it right. Let's try again."

MS. LONDON: Commissioner, I'm Jody London from Working Assets. I just want to add a couple of things along this discussion.

In terms of the incentives, one of the provisions that we've built in is that if you don't line up your customers, and so if you're a supplier your customer is going to be a marketer and if you're a marketer you're going to have to need to have your end-use customer, you're going to lose your credits and they're going to go back into the pot.

And so there's an incentive there to keep people moving along and get the customers online.

And I think part of the pricing, when we were thinking about this was what are we going to -- what kind of price is the end-use customer going to be willing to pay and how is that going to compare with what we're going to be competing with that's coming out of the power exchange. So that's part of what we were looking at.

I think we would like to refine those numbers and get them to be somebody that everyone's going to be comfortable with. But this is --

COMMISSIONER SHARPLESS: So are you going to try to get the incentives, though, so that every technology has a level playing field, more or less. So that when the marketer goes out there, they can say, "I have a basket of biomass, wind, geothermal and solar," --

MS. LONDON: Right. But we --

COMMISSIONER SHARPLESS: -- and so you don't have a price differential between these technologies?

MS. LONDON: There may be some price differentiation, but if I'm putting together a portfolio, I need to weigh that when I look at what I'm going to be ultimately selling to the customers and the kinds of prices that they're going to be anybody all to pay.

So I may know that if I pay a little more for this project, I'm going to want to pay a little less for that one so that I'm coming out with an overall price that's right in line with where I think customer demand is.

COMMISSIONER SHARPLESS: If that's the mechanism, though, and you do try to do that kind of weighting, for those who need a little bit more support, aren't we just establishing another four-year cliff for somebody to fall off of?

MS. LONDON: Go ahead.

MR. MILLER: I think potentially I think part of a lot of our motivation in providing different levels was, first of all, to ensure that there is a diversity of supply out there in the retail marketplace, which I think is good for -- and I think is certainly a goal that we'd like to see maintained. And also to make sure that there is in a sense of equal opportunity to gain a market position for all technologies at this stage.

And so if at the end of that timeframe we find that certain projects weren't able to -- find after that initial experiment, certain technologies may stick more in the marketplace than others, I do think it's important to give all, as many as technologies as possible an opportunity to get into there. Because I believe that people are going to like what they see when they get out there. And so we want to make sure everyone has a chance to gain some experience there.

And I really do believe over the long term, in terms of the consumer market which is going to drive a broader, the broad demand for renewables at an aggregate level, simply getting them, being out there this next four years provides an important contribution to that.

And I think we will be in a growth mode at the end of this transition and there will be new projects getting built with economics that can easily replace, if individual projects aren't able to turn out to have been --

COMMISSIONER SHARPLESS: I'm a little nervous about new and emerging fitting within in a four-year timeframe. Do you have any comments on that? Whether or not they would be in a position to fit within this type of marketing style given perhaps the start-up times that they need and permits that they need to get and other requirements that they need to get?

I meant most of us who have been in any kind of siting proceeding, as valiantly as we try, stuff happens. You hear Mr.

Ferguson who says we're going to do better next time around on some of these technologies. And four years is a short timeframe in which to bring new and emerging, some of the new and emerging into the market and use the money.

MR. MILLER: In the case of new, I do agree that it's important to provide some mechanism for a project to change the timing of when they receive the money. I certainly don't think that four years is too long to figure out which -- for people to decide that they want to build a project and to get comfortable with that and make the decision to go forward. I think that's ample time.

And so I do think it's important to provide a mechanism for the new projects to modify the timing. And we think that ought to be something that they can essentially choose to do and post appropriate security to match the specific proposal. I think that would -- I would envision that almost being a secondary.

First you would get an allocation, then you would work out the details of the timing of that with the Commission, after gaining the allocation. And you would work out the -- negotiate an appropriate security level.

For emerging, I guess I view an emerging technology as one that can be supported by customer incentive. That if you --

COMMISSIONER SHARPLESS: You view it as one that can?

MR. MILLER: Yes. That if a technology -- if a technology, if you a customer incentive doesn't -- if a technology is not at a stage where a customer incentive doesn't work, then I'm not sure it's an emerging technology.

And I guess in the terms of PV, which is one I think that clearly does fit that definition, I see a pretty strong infrastructure out there that could start literally next week -- could start the day after these funds are allocated.

COMMISSIONER SHARPLESS: So your definition of emerging would be basically something that could be taken off the shelf? It's already in the commercialized state?

MR. MILLER: It's in the sense that commercial --

COMMISSIONER SHARPLESS: It doesn't need a little boost in the commercialize -- see, I don't understand the difference between that and new, quick frankly.

MR. MILLER: I guess it's -- I'm not sure I see a clear difference. I guess my focus was one in which maybe the distinction is new is more of a mature technology that is both commercial and its economics are fairly well understood and not likely to be subject to dramatic change. Certainly you would expect continuous improvement.

Emerging might be one which is clearly demonstrated, commercially applicable in the sense that at the right price consumers will buy it in large numbers and there are no questions about whether it works or not. And that given a little more assistance and a little more demand, and really only demand, that price is expected to come down dramatically into a point where it has a much broader market, and so it's worth providing -- that that's really the difference, is the state of the maturity of the economics more than necessarily the technical maturity.

And something that hasn't maybe quite made the technical maturity might be more RD&D than emerging.

COMMISSIONER SHARPLESS: Excuse me. Do you intend to provide more details about your proposal on the 26th? I'm curious. I haven't had a chance to read your proposal --

MR. MILLER: Okay. I think --

COMMISSIONER SHARPLESS: -- so I don't know how worked out it is or whether you've answered the Committee's questions.

MR. MILLER: Sure. I feel our proposal, and particularly when combined with the questions, I think, we hope gives a fairly complete view.

If there are specific mechanisms that need to be worked out in more detail, we're certainly welcome to do that. And obviously we would very much like to work closely with others in developing a broader basis for the allocations and setting some of the figures down. But we hope that our -- we've tried to make our proposal fairly comprehensive.

COMMISSIONER SHARPLESS: Thank you.

PRESIDING COMMISSIONER MOORE: Eric, you mentioned the question of diversity as goal or an objective, being a good thing. That of course underlies a lot of the discussion about whether or not we ought to include every technology somehow in this system.

I'm not there yet, and so I would ask you the question of whether or not diversity is critical to the success of the system. I mean it may be noble. And it may be something that the Commission has supported in the past, but is it critical?

MR. MILLER: I certainly think it would be a shame for a given technology -- or a given industry not to have an opportunity to gain some experience in a competitive market during this transition and essentially being left out of that opportunity so that, you know, they really weren't at the same stage as other technologies in their ability to compete in the open market. So I think that would be a shame if we didn't do that.

I guess I would agree that maybe I'm talking more about a diversity of opportunity than necessarily a guarantee of a specific outcome.

PRESIDING COMMISSIONER MOORE: Okay. That's fair.

I'm going to call time out and let us go to lunch. I ask everyone to come back here in at hour at 1:30.

Is there anybody here who needs to go to the PUC that I didn't take this morning, especially in the solar cards here? If there is, come up and tell me so I know to take you in time.

[Luncheon recess taken from 12:30 to 1:45 p.m.]

PRESIDING COMMISSIONER MOORE: Good afternoon and welcome back.

And we're going to start off where we left off, and that is getting back on to the solar arena. I've indicated to Don Aitken, he's got a couple of wrap-up comments that he'd like to make, and then he's an invited guest at the PUC. So we'll turn him loose.

I know from conversations with some of you in the hall that there are others who are going to try and make the late afternoon part of the CPUC. I understand that. We'll be taking testimony in as focused a way as we can. We aren't going to cut anybody off, but we're going to ask everybody to try and focus their comments on the consensus items that are emerging. And we'll try and get as many of you out who need to get to the PUC as is possible.

Dr. Aitken.

DR. AITKEN: Thank you. I'm Donald Aitken. I'm Senior Scientist with the Union of Concerned Scientists.

I'm up here to explain a little bit of a task that kind of emerged in the last two meetings. The submission for this was one that I had on the table -- I see there are still two or three left -- called "Consensus Position Survey on Certification

Criteria Proposals."

At the CEC Workshop on November 4, the Union of Concerned Scientists put before the Commission the proposal that you would have a better chance at economically attractive ventures with some of the renewables if you would ease up on the hybrid classification and allow possible attractive hybrid configurations with fossil fuels in ways that can enhance the economics of the renewable portion, and not be trapped with the QF value or the 25-percent value.

And over the last couple of workshops I've talked about that at some length. And what happened is that the people came up and strongly supported that. That whereas we will accept QF designation for existing projects, when we go to new projects we really need to be economically open and make the best deals that produce the most renewables for the least cost to consumers and to this program.

And without going into more detail than that, because I have discussed that issue, I said that people have been coming up clearly very much in favor of that, and I made the statement before this Commission that I felt I could pull together a consensus comment on that.

That was interpreted as would I try to take on the whole certification issue and see where a growing consensus might be on the areas of certification, the multiple questions that they have on their Appendix B asking about that.

And so I agreed to do that. And I faxed out a package consisting of a letter explaining what we were after and the entire Appendix B that has all of the certification questions on it. And I put in some UCS positions to sort of serve as a discussion points on that. And I faxed that out to 30 parties.

And the 30 parties were representative of all technology sectors of the renewable energy industry, all technology or power producer alliances, all public interest organizations that have been active in these proceedings, the Electric Power Research Institute, NREL and the University of California. So it was a good, broad cross-section that went out. It kept my fax busy for four hours.

Only six responses were received. Now two were received from industry associations and NREL, EPRI and two consultants who have been active in these proceedings responded as well. I'm told a seventh sent an Email which I hadn't gotten by the time I came here.

And at first I thought, gee, that's kind of bad that people are not willing to participate in that, until I realized and learned that there, in fact, have been major work on achieving consensus on certification. There are two different groups that have been hard at work.

One of them has been presented to you today, and that is the biomass, geothermal, wind coalition, also represents a consensus position on certification. And that consensus involves many of the people in their industries.

And the second one was a consensus position that grew out of meetings that CEERT had sponsored and had a lot of stakeholders in it. And I have seen the draft of that consensus position as well. I was allowed to look at it and analyze it.

And I had hoped it would be submitted today. It has not been. I hope it will be next week.

And simply by looking at these was about to see, first, they're a growing consensus position. Secondly, that the consensus positions are not really competitive. They're really quite complementary to one another.

So, in essence, this is kind of a snapshot. If everything had been submitted today, then this would have been possible to fold in these two consensus positions plus responses that I still haven't gotten and would still entertain from other people and categorically by each of your questions, say this is the way it's looking.

I can't do that for submissions that haven't been made to you yet. Here I am on the same hook I was on this morning.

And so I simply had to shortcut it here and say that's a situation. You actually do have two major consensus positions coming in. They're not competitive. They're complementary.

And fortunately for our own proposal there's been not only no disagreement on our own proposal, but there's been a lot of support and stated support that specifically has come in for that.

So I'm afraid I had to conclude that there was no useful propose at this point by trying to give you a half consensus of what is coming -- is here and the rest that's coming in next week.

Now I'm also aware that the CEC is going to commission a person to do exactly that and to pull all of that together for you after it's submitted and advise you on the consensus certification statement. And if somebody's paid to do that, that's wonderful. That reduces my workload. But if that doesn't happen, when I return from overseas -- you'll recall I leave tomorrow -- and return on December 1, and if that has not happened and you still want -- everything's in now, now let's do it, I will resume that task.

And in that possibility for those deadbeats out there who received the fax but did not respond and would like to respond, you have a brand new opportunity of 10 days when I'm traveling overseas. And we'll see what comes from that.

So I'm sorry. That's all I can really give you at this point on that.

PRESIDING COMMISSIONER MOORE: I think that's a good example of the bully pulpit, literally.

DR. AITKEN: Something like that.

PRESIDING COMMISSIONER MOORE: Thank you. I hope you have a good trip.

DR. AITKEN: I'm one of those who is on two of the CPUC panels. It has nothing to do with loyalty, sir. And I really must leave now. And --

PRESIDING COMMISSIONER MOORE: Thank you, Dr. Aitken. Appreciate your comments.

DR. AITKEN: I'd like, the final thing to say really, is to explain that I was up this morning sticking my neck out -- the numbers and everything I put before you this morning really should have been coordinated with all the other numerical submissions that you're getting next week. And it's because I go overseas to Cyprus and Sweden tomorrow that I thought I better just put out before you my work so you can shoot at me now and give me input now, since he won't be able to next week. So that explains this out-of-sequence stuff. I hope it hasn't confused the issues too much.

PRESIDING COMMISSIONER MOORE: Thank you.

All right. I'm going to start then with Steve Kalland. And you're going to introduce the solar presentations.

MR. KALLAND: My name is Steve Kalland. I'm with the Solar Energy Industries Association as Associate Director for State Programs.

I'm here filling in for Les Nelson, who mostly of you probably know, and who has been representative of the solar industries in most of these workshops. Les was unable to attend because of a different schedule, conflict, but will return for the Workshop on November 26th.

I'm going to make a brief presentation on the SEIA, CalSEIA proposal and make note of questions that the Committee has today, but I'd ask if it would be okay to defer answers to those questions until Les returns on the 26th.

The SEIA, CalSEIA proposal is an umbrella proposal. By this we mean that it provides general principles for AB 1890 renewables implementation, funding allocation recommendations and a broad overview of our proposed programs. We in our membership are in the process of developing the details of these programs and plan to provide more detailed information at the next meeting and in the future.

Following my presentation you're going to hear from a variety of our members and other representatives who will provide you with a better feel for the current status of the solar energy industries and where they're headed over the next five to ten years.

First a little bit about who we are. The Solar Energy Industries Association is the national trade association of photovoltaic and solar thermal manufacturers, distributors, developers, installers and operators.

SEIA has now not 12, but 13 state chapters. We just added Washington State. Some of those chapters are regional, so we actually cover 22 states in the U.S. and represent over 500 companies nationwide, ranging from Fortune 50 companies to small businesses.

CalSEIA is the California chapter of SEIA, representing about a hundred companies. Using the AB 1890 terminology, we represent some of the existing California operators, particularly the nine solar thermal electric QFs, but primarily we represent emerging technology companies.

We believe the legislative language of AB 1890 provides the general principles to the CEC in developing the Renewable Energy Implementation Plan. The plan should promote a portfolio of renewable energy choices, including technologies which are already cost-effective, or emerged, and technologies which have recently competed in their RD&D phase and are currently higher costs but have significant commercial potential, the emerging.

Programs should assist the entry of renewable technologies into the competitive marketplace. Renewable funds are an investment to reduce technology costs to allow companies to compete for customers in the open market. They are not intend to provide ongoing subsidy to renewable energy operators.

Programs should adhere to market principles and competitive practices. AB 1890 establishes three broad categories: Emerging, new and existing, which group technologies at similar stages of development.

Within these categories programs should encourage competition as an effective means of reducing costs and preparing technologies for success in the open market.

Programs should recognize that large central station technologies and small-distributed technologies are fundamentally different, and that different funding mechanisms would be required for those two groups.

And, last, programs should recognize that the solar energy technologies provide value beyond electricity production, such as benefits associated with reliable on-peak production and benefits associated with distributed generation.

Since we primarily represent the interests of emerging technologies, it would be useful to explain what we mean by that. Our definition of emerging technologies is renewable energy technologies technically demonstrated yet not widely commercially deployed, but are considered by a consensus of knowledgeable experts and the CEC to have significant commercial potential.

This includes but is not limited to solar technologies such as flat plate photovoltaics, concentrating photovoltaics, solar central receivers, solar dish engines and other technologies which will inevitably emerge from the R&D pipeline in the future.

It should be noted that the CEC and the US Department of Energy have support the RD&D of all of these technologies.

The companies that are following my presentation will give you more detailed information regarding the future commercial potential of these emerging technologies, but I want to provide a couple of general thoughts here.

First, in an open market solar electricity or hardware does not have to be at least cost necessarily to be commercially successful, but rather within the range that customers are willing to pay.

Second, surveys indicate customers prefer renewable energy generally over fossil and nuclear, but also indicate that they prefer solar energy over all other forms of renewable energy. There's some Roper polls from 1987 and 1993 that indicate that solar energy is preferred almost two to one over all other energy forms.

According to Cambridge Energy and Option Dynamics poll of 1995, one in five Americans are willing to pay a 30-percent premium for solar electricity. And in 1994 a market study by the Utility Photovoltaic Group, a consortium of over 70 U.S. utilities, rejected a market of over a thousand megawatts, about $3 billion, for distributed applications in the Pacific Southwest, including California and Nevada, Arizona and Hawaii, and a $3-peak-watt system price level.

And this graphic just shows some of the results from those two Roper polls in '87 and '93. And you can see that solar did quite well, not only compared to the fossil, but compared to all of the other technologies.

I will present our recommendations of the AB 1890 funding allocation first, and then the reasons that we believe these allocations make sense.

Funds should be allocated 50 percent for new and emerging renewable technologies and 50 percent for existing renewable resource providers. That would be the initial break. Then within the new and emerging category, we believe it should be subdivided so that new and emerging technologies, which are at different stages of development, do not compete directly for funds and that the funds in this category should be allocated 50-50 between new and emerging.

The justification for a minimum 25-percent allocation for emerging technologies is as follows. Emerging technologies represent the broadest allocation category because it includes all promising technologies which may emerge from the technology pipeline in the future.

Emerging technologies will require greater funding than new renewable technologies on an equivalent basis to make projects commercially viable. Emerging technologies show the greatest promise to achieve significant cost reduction over the next 10 years.

Emerging technologies represent a good investment for Californians beyond clean energy production in two ways, both funding emerging technology deployment fosters high -- California high-technology economic development, exports, outside development and jobs. California's already home to the largest concentration of emerging technology companies and promoting deployment allows existing California companies to expand and create new jobs.

In addition, it will attract outside investment from other companies that are already looking the site new manufacturing facilities.

Secondly, funding emerging technology deployments attracts federal investment to California. The federal government continues, through the US Department of Energy, to invest significant funds in the development and early commercialization of emerging technologies.

As mentioned before, we're in the process of developing program details which will be forthcoming in the future workshops, but as a brief overview, at least, for the emerging category, it's important to realize that separate programs will be required for small scale distributed technologies and the large scale central station technologies. It's impossible to develop a blanket proposal that would serve, say, a two-kilowatt rooftop PV system and a 140-megawatt power tower all at the same time.

The proposal program for small scale distributed technologies provides customer incentives to purchase hardware, including a low-cost loan program and a hardware buydown program.

The program is designed to drive down system costs over a six-year period to $3 a peak watt, the price level at which a thousand-megawatt self-sustaining California market exists, according to the UPVG survey that I mentioned earlier.

The proposed program for central station emerging technology provides a technology cost buydown for commercial projects through a CEC-managed four-year competitive solicitation beginning in 1998.

At this point really we only have limited comments on the new technology category, but I guess most critical that those programs should be competitive and open to all technologies.

On the existing we only have general comments as well. To support the operation of existing plants, they should be -- incentives should be structured to provide investment in the plants to make them more efficient and cost-effective. This might include capital improvements, O&M cost reduction projects or a debt reduction plan.

Finally, we believe that the California Alternative Energy Financing Authority can be used to complement and leverage the AB 1890 funds by providing a pool of low-cost long-term funds for projects or system loans.

A couple of other issues to wind up here that are of importance. First, this hybridization issue represents a promising renewable energy commercialization strategy, we believe. We support the UCS position that the CEC should recommend changing AB 1890 language to allow funds to be used to support the renewable portion of new and emerging hybrid plants that utilize more than 25 percent fossil fuel.

The CEC should work with other states in regional alliances to promote renewable energy development to leverage these AB 1890 funds. Nevada's Solar Enterprise Zone has a mandate to develop a thousand megawatts of solar electricity over a seven-year period. Arizona's proposed restructuring ruling includes a solar portfolio standard, which will create 200 to 300 megawatts of solar electricity capacity demand.

Clearly California and California companies stand to benefit through the export of hardware or solar electricity by working collaboratively in these states.

Thank you now. If there are any questions, I'd be glad to make note of those and get them to Les Nelson and to Mac Moore, our National Representative, who has been working on this, and those responses will be delivered next week.

PRESIDING COMMISSIONER MOORE: Why don't we -- before we open it to questions, you've got two other folks that want to speak with you. We'll get them all on the table, and then we'll come back to questions.

MR. KALLAND: Okay. We can do that.

I think we had Ray --

PRESIDING COMMISSIONER MOORE: Ray Dracker.

MR. KALLAND: -- Dracker next.

MR. DRACKER: Thank you. My name's Ray Dracker, the Manager of Renewable Energy Development at Bechtel Corporation in San Francisco.

Bechtel has a very broad range of interests across the renewable energy spectrum. We've been actively engaged in the research, development, demonstration and, I think most importantly, the commercial application of many renewable technologies.

We are longstanding and active members of the American Wind Energy Association, the National Bioenergy Industries Association and the Solar Energy Industries Association.

Among the things we're engage in right now, we are just in the process over the past six months of successfully commissioning 130 megawatts of biomass plants on the East Coast of the US. We are also engaged in the development and, hopefully in the nearterm, the commercial application of some advanced biomass technology, some small modular systems and some advanced gasification technologies. I think this holds some critical future promise.

We are in the process of procuring and constructing a large wind farm in Latin America. We have constructed geothermal plants here in California. We, over a 10-year period, had been the technical manager for the PVUSA project and are currently engage in the development and hopefully the commercial application of a several-thousand rooftop PV program.

And so we do have a very broad spectrum of interests across the renewable energy horizon.

We view this AB 1890 program as being a very critical one to maintaining growing a California renewable energy industry. We think it's very important in terms of keeping important renewable energy options alive for us when we do have large load growth in the future.

And also more importantly, maybe in the short term, maintaining a strong renewable energy industry in California for global export markets, which there are many of worldwide right now.

But with all of that, I came today to just speak on one particular technology, and that is solar central receiver technology, mainly from the standpoint that in spite of quite a history that the technology has here in California and the very large amount of information on the record with the state, both at the PUC and the CEC regarding sort of the virtues, the potential and the status, the developmental or commercial status of the technology that's on the record here, it seems to have been not brought forth in these proceedings up until now, and I just wanted to be sure that that information was with you.

Solar central receiver or power tower technology is not the be-all, panacea renewable energy technology I think what we've witnessed here in the past 15 years in California, it is that a broad mix of renewable energy sources and within the sources, various approaches to -- in terms of conversion technologies are important for a healthy, robust industry.

But power tower technology does have some unique attributes and some very important ones, I think, for California.

What I have to say specifically on power tower technology this afternoon is being done on behalf of both Bechtel and Rockwell, which is located in Canoga Park down south.

Solar central receiver technology, as I mentioned, has a long history in California. It's been evaluated quite a bit by utility companies, by independent power companies, by the CEC itself. And among its merits are -- in the bulk power applications that it looks to serve in the future, and this clearly is a large bulk power technology as opposed to PV and modular biomass and other things which have some distributor attributes, it is a bulk power technology.

In large scales it does have the opportunity to be very cost-effective.

And because of the inherent nature in which it utilizes its molten salt heat collection fluid, it very effectively incorporates energy storage, which makes it a dispatchable solar energy option. One that can easily be designed to meet evening summer peaks in California, which -- and provide appreciable capacity value, you know, speaking in the old jargon of when that was a critical item here.

In terms of where the status of the technology is -- and like I say, one of the benefits I get from working with a large company like Bechtel, is we are able to look at technologies from the concept stage, at the very rudimentary research level all the way to turnkey commercial application on fully commercial terms.

Solar central receiver technologies has been in a development and demonstration mode over the past 10 years. And the demonstration activities are culminating with the successful execution, start up and operation of the Solar Two project.

Solar Two is down near Barstow, California. It’s a 10-megawatt plant. It is proving out all of the basic developmental concepts of the technology.

The next steps that are needed for the technology are to scale up. The technology can be designed -- can provide a range of applications, again all for the bulk power market, ranging from systems in the, say, 30- to 50-megawatt size range in a solar-only mode, or in a solar mode with minimal fossil support, supplemental fossil energy, all the way to larger scale hybrid systems that would use advanced high efficiency, natural gas fired combined cycle technology in a very synergistic way.

The next steps we face are to do a commercial introductory project. And I view what we need to do is to build a system in the 30- to 50-megawatt, in the solar-only mode range or a project on the order of 150 to 300 megawatts in this combined cycle hybrid mode, which would have a solar component on the order of magnitude of that 30 to 50 megawatts that I described for the solar-only project.

So that the technology is ready to make that step. I think with some key supports from this program, it can achieve those commercial introduction objectives.

There have been various methods proposed on how AB 1890 can support emerging or new projects, and I could see vehicles for a power tower project accommodating all of those.

A simple one would be an upfront grant buydown. I know there was some discussion this morning about, well, this is a four-year program, how can we get supports to emerging projects in that timeframe. During this four-year window, we will be ready to make the commitments and initiate -- complete the financing, initiate the construction of the project. So a grant vehicle could certainly come within that window. But other options, such as low-cost loans or energy credits would also help.

So I just wanted to speak out on behalf of this technology, which I think, again, has some unique attributes and is going to be a very important part of this mix of renewable energy technologies for California's future. That's all I have to say.

PRESIDING COMMISSIONER MOORE: Thank you.

Then let's bring up the third member, Dr. Barry Butler, and then we'll be ready for some questions.

DR. BUTLER: I'm Barry Butler with Science Applications Informational Corporation. I'm here to point out the SAIC view of the world. This is in the presentation.

We've divided into the existing renewables, new renewables and emerging, and our view is that the technologies that are in that emerging slice, which are mostly what we call the direct solar conversion technologies, the ones that use sunshine directly to make electric power, are sort of in there. There are agreements that emerging should be a much smaller slice.

And what we're proposing is that these manufacturers and major California companies have an opportunity to grab the world market. And so we're fighting for our place at the table, as it were.

The technology that my company is involved in and invested several million dollars in ourselves and the national program, DOE's program, has invested 30 to $40 million in this technology. And we're right at the place where were able to take off and create those jobs.

And rather than leave it in the abstract, I want to put up just one chart. And this is an example, not a request for money, but an example of what you can do.

Now we built and have five -- we built one operating unit. We have five that are going in. We're hoping to put one at SMUD. We're talking with Southern Cal Edison about putting some at their Pomona facility, Cal Poly. We do have -- Arizona and Nevada have already subscribed to take 25-kilowatt dishes as part of a government program. By the end of 1997, we'll have five systems up and operating.

Given that they prove the reliability that we think they'll have, what we're proposing at 25 kilowatts per unit, 400 verification units. And how could money from AB 1890 play into that? It looks like a $60 million project. The federal government has committed 15 million for this project already. Users are willing to put up something in the neighborhood of 45 million. And with the leverage of something like 10 million from AB 1890, this project would be a reality.

Now the question is how do you get from where you are to where you want to be. We're talking about going from costs at the end of the first five of $10 a watt down to costs of $4 a watt. At $4 a watt we think these things will catch a very significant world market.

And these are installed dispatchable power systems. They have natural gas or liquid fuel that can burn in the Stirling engine, so when the sun goes down, you turn on the liquid or gaseous fuel, and the system keeps right on operating.

So this is a 25-kilowatt dispatchable unit. So it can be placed at the end of grid. It can do firm line support. It has lots of benefits to the emerging world.

And I guess I'm speaking for, in terms of all of the emerging technologies, use the common measures, get the right market penetration curves, and clearly the CEC is a key in developing those curves. And we think that this program could take us from the 40-megawatt range into markets that would put us just on the edge of what might look like 4,000 megawatts.

So you can see that we're trying to move with this project from here out into there somewhere. And that's what I call emerging. We're going from right about where PV is now to very significant line-support markets.

So the size of the market, as you invest the AB 1890 money, you look at the size of the market you can create, and we've calculated that we'd created 120 jobs per megawatt electric that's put in place. And that's 20 jobs for every million spent, basically. And those jobs are installation jobs, fabrication jobs, manufacturing jobs.

And if this project was built in California, 60 million will be spent and benefit California. If it's built in Nevada or Arizona, they'll get a major benefit.

And then as you're making your investment, you're looking at how many megawatts will be put out per million dollars of CEC investment. So I guess by way of example, I'm just suggesting not the dollars up here are right or exact, but they would be proposed at the right time. But as you go down, look for common measures. And emerging technologies, a lot of money has been spent by the federal government, and these technologies are indeed on the verge of emerging.

Everybody says, "Yeah, how can you compete with wind?" Well, with this kind of dollars-per-watt, I can go out to the end of the line and add firm capacity, and I don't need a battery, don't need backup.

So every technology should have its place at the table. I'm not here to speak against anyone. But I do believe emerging should have a reasonable place at the table.

Thank you.

PRESIDING COMMISSIONER MOORE: Thank you, sir.

Well, an interesting opening to the concept. And --

MR. KALLAND: We do have one more speaker on the PV subject.

PRESIDING COMMISSIONER MOORE: I'm sorry. I didn't go ahead.

MR. KALLAND: I didn't mean to interrupt.

Howard.

PRESIDING COMMISSIONER MOORE: Howard Wenger?

MR. WENGER: Yes.

PRESIDING COMMISSIONER MOORE: See, I understood that you and Tom Jensen wanted to speak together. I separated or cleaved those from these. If they're part of that, then please come up.

MR. KALLAND: We can do them separately.

MR. WENGER: Go ahead and then we'll transition to us after you. So we don't have too many technologies at once, we recommend that you go ahead and ask the questions of the presenters so far, and then we'll come up after --

PRESIDING COMMISSIONER MOORE: Well, I don't know that -- do you have questions so far?

COMMISSIONER SHARPLESS: Well, I am kind of -- I would like some clarification, particularly by the last speaker of what this definition of emerging might be. If you could come, be transcribed.

DR. BUTLER: Sure.

My definition of an emerging technology is one that has been proven technology, which means it works. We know Dish engine systems work. We now photovoltaic systems work.

The questions that we have in financing these are how reliable are they? How long will they work? How much O&M? Is it dispatchable?

So to me an emerging technology is one that's been demonstrated to work, but not demonstrated itself to be economic, because you have to have three elements: Cost, performance and reliability.

If cost is there or close to there, performance is there, then reliability is the key issue. So I see emerging technologies as the ones that really need to have the reliabilities evaluated.

COMMISSIONER SHARPLESS: But if we have a competition among emerging, what criteria would you recommend the Committee look at in terms of making an evaluation of which emerging to fund?

DR. BUTLER: Between the emerging technologies, because everyone has said before each one has different requirements, the size of the market, what it can do. For example, my technology might go at the end of the line for line support, but power tower has to be built as a major baseload power plant.

So what I think needs to be done is look at the market, use the market curve to decide what size market could indeed be generated for each of the emerging technologies, and how much of that market you would capture if you invested in it.

COMMISSIONER SHARPLESS: What about timing?

DR. BUTLER: You know, wind was an emerging technology when they had unproven reliability. Dish Stirling's an emerging technology without proven reliability.

I think that right now we have many technologies the federal government's put a lot of money in to get the demonstrations and the proof of concepts there. Power tower's one. Dish Stirling is another. Photovoltaic is the third.

And I think the timing is right now for them to move forward.

COMMISSIONER SHARPLESS: Well, that wasn't exactly the kind of timing issue I was talking about.

DR. BUTLER: Okay.

COMMISSIONER SHARPLESS: You know, our friend Dan came up this morning and was talking about levels of funding. And he was saying that at the very minimum, this would be the amount that we would like to see for emerging. I was trying to probe questions as to how they got to the minimum level.

And being an old budget person, you usually have some backup for the number: How did you get to that 18 percent?

I don't see how the proposals or the presentations of the last three individuals have given me any sense for amount that you might be talking about and what criteria you would be using and judging which types of technology would be the best types of technology to fund with the very limited dollars that we have.

And I don't know whether your numbers match with his numbers or if you've got a very different set of numbers. I think that the Union of Concerned Scientists may not think that your type of technology is eligible under 1890. I'm not quite sure how that conclusion was drawn, but --

DR. BUTLER: Yeah. And I think we probably need to talk to Don a little bit about how that conclusion was drawn, but at SEIA headquarters, which is where a lot of this work was done, we've gone back and looked the different technologies, what state they're actually in, how many jobs they could create. And we have to have a session back there with Steve. And we have not put forward together the actual numbers.

The 25 percent was really derived by looking and saying where do we think it ought to be in terms of the total value to the country, and trimming a lot of stuff out. I mean we didn't just let the number explode. And so it would only pick the closest technologies to commercialization.

And we do have a methodology which we went through. And I think they're going to present that at the 26th.

COMMISSIONER SHARPLESS: Was it only solar that it looked at?

DR. BUTLER: It was -- it was photovoltaic -- what we called am emerging technology is photovoltaic and power tower and Dish Stirling were the technologies that we had in doing that analysis.

COMMISSIONER SHARPLESS: Okay.

Yes, Marwan.

MR. MASRI: Okay. All these emerging technologies that you just enumerated, are any of them still in any stage of research, development and demonstration, or have they passed all those stages?

DR. BUTLER: The ones that we considered had all passed through the research, development and early demonstration. For example, the photovoltaic systems are being tested by SMUD.

Systems that are behind that, higher performance systems or systems coming out of the laboratory, we didn't even consider. We considered the systems that we really had utility scale validation on. Because we felt AB 1890 had to be utility strength systems. So --

MR. MASRI: In other words, there is no more need for demonstration of any of those technologies? They're just ready to enter the commercial stage now?

DR. BUTLER: I think that there's always room for more demonstration. I mean that's -- to identify more markets where you're market conditioning and market application, but I think the answer is they're ready to go now, commercial.

MR. MASRI: I have another question.

COMMISSIONER SHARPLESS: Yes, Marwan.

MR. MASRI: The $6 price target, or $4 a watt that you talked about, is that achievable with an assumption about some subsidy from this fund or is it achievable at all, but over a longer period of time without the subsidy?

DR. BUTLER: Yeah. Actually I didn't show the chart, but it's the same for PV.

You start out with the money that comes from the funding agencies like DOE and CEC has a significant fraction of buydown and buying the price to the utility down so it looks like $4 a watt. But at the end of five years, the price really is $4 a watt with no subsidy.

You know, someone walks in the door and puts that money on the table, they take a system away for that and there's no continued involvement on the part of the federal government or the state government. And there's no subsidy in the $4-a-watt number.

And in the PVs number, I'm sure there's no subsidy there either, and it's very similar.

COMMISSIONER SHARPLESS: Is that how you got to your 25 percent, is basically a buydown program?

DR. BUTLER: Yes.

COMMISSIONER SHARPLESS: For solar tower and for Stirling and for PV?

DR. BUTLER: It's that type of program.

COMMISSIONER SHARPLESS: So the concept that we heard before we broke for lunch on sort of a marketing scheme for emerging technologies as well as new and existing, do you see that working for you?

DR. BUTLER: If you knew how to aggregate it properly, I think the answer is a scheme like that could work.

Because what you're doing -- if you think about it, what we want to do is ultimately connect the customer with the product, have it built and make profit and pay salaries. So a program like that, that connects the technologies to customers probably has some benefits.

There are also benefits on the other side, where you could see that a more direct involvement from CEC in terms of funding projects could have the same kind of effect. But I think the answer is, yes, it could work for us.

COMMISSIONER SHARPLESS: Of course that program is the four-year program. I don't know how long you would need your customer incentive to result in the type of buydown your technology would need.

DR. BUTLER: Yeah. I think the way we looked at it, the buydown at the $4 a watt, the international market opens dramatically, and the line stiffening or end-of-utility-grid market opens very quickly at the $4-a-watt range, so we felt that there are customers and people who commit to products at that level.

The challenge I saw with sort of the incentive program is that it takes a while to get the incentive program in to educate people to make the deals it takes to get it done, where I think our technologies are ready to try to make much more direct deals to get the prices to fall quickly and get the consumers based on the requirement to have the product at the price. Solar energy at a reasonable price.

COMMISSIONER SHARPLESS: I think you lost me on that last comment. So you think it would be easier for your technology to be marketed or more difficult?

DR. BUTLER: I think it would be easier for us to have some kind of arrangement where the buydown comes from a central agency, such as the CEC. And the projects, it would be easier to negotiate the package to make the price drop -- it quicker. It may be not easier, quicker certainly.

And perceptually it's much easier, because if I'm going to go target other people's money as well as CEC money -- you see the challenge for our renewable technology, to get through over this hump, is we'd like to go attract money from Washington.

So if we have a deal with the CEC, we can go lay that in front of the folks in Washington and everybody understands that deal.

If we have a deal that is incentivized in some way, we'd have to get all those incentives in place and then go back, so it would be a little bit harder to bring money in from outside the state. They see the CEC as a leader, and so they would -- they'll formulate deals around that, and are already doing that.

COMMISSIONER SHARPLESS: Thank you.

DR. BUTLER: Thank you.

COMMISSIONER SHARPLESS: I wanted to ask Steve. Steve, if you could, since you're the umbrella person.

MR. KALLAND: And I'm getting awful wet for that, too.

COMMISSIONER SHARPLESS: Yeah. What I you wanted us to really direct or hold our questions and direct them to Les when he comes on the 26th.

Is your proposal that you've offered us today the complete package or do you intend to provide more information?

MR. KALLAND: We do intend to flesh this out some more by next week.

I would actually like to get some of the questions that you might anticipate asking Les in advance, so that I can take those back and maybe have put together some more materials to directly answer those questions in the next piece that we present.

COMMISSIONER SHARPLESS: You mean on top of the 17 we already asked of everybody?

MR. KALLAND: If you had any questions on what I said today, that we could flesh out a little better in the next piece.

COMMISSIONER SHARPLESS: Well, not directly because your questions were of a general nature and I think we're trying to focus now and get definitely more specific.

MR. KALLAND: There's more on the mechanisms than anything. That's where we're really moving general broad brush. And I think we'll have more detailed information on those mechanisms next time, on the 26th.

COMMISSIONER SHARPLESS: Well, I hope it's not just these things. I hope you do because we're running out of time --

MR. KALLAND: Sure.

COMMISSIONER SHARPLESS: -- if you didn't hear that this morning.

Okay. Thank you very much.

MR. MASRI: Excuse me. Just one more question.

COMMISSIONER SHARPLESS: Yes, Marwan.

MR. MASRI: Does your proposal also -- I think you did mention it represents the SEGS projects in California?

MR. KALLAND: It does. And I have to look at my scripted piece to reiterate.

What we're doing with them is, I think, pieces that deal with O&M sort -- the exact wording that they were using -- structure to provide investment in the plants to make them more effective and -- or more efficient and cost-effective, and including as possible options, capital improvements, O&M cost reduction projects or a debt reduction program.

MR. MASRI: And would you have specific amounts to these different categories such as --

MR. KALLAND: I can ask to try and have that in proposal next time.

MR. ALVAREZ: And I just have one question. You talked about the California Alternative Energy Financing Authority. Have you talked to them at all about the proposal you have in here about debt reduction strategies, or have you pursued any discussions with that organizations yet?

MR. KALLAND: Unfortunately, I'm not the person to ask that question. Les would be the one to respond to that, and I'll ask him to address that when he's here next week.

PRESIDING COMMISSIONER MOORE: Thank you.

Then, Tom Jensen and Howard Wenger, you're both on.

MR. WENGER: Hi. My name is Howard Wenger. I'm with Pacific Energy Group, a principal of Pacific Energy Group, but I'm here today representing the Photovoltaics for Utilities California state working group or PV for U for short.

The California PV for U collaborative, as it's known, has been around for about four years. There's actually a national PV for U organization with something like that 15-state collaboratives in 15 different states around the country.

The California PV for U group is comprised of a very diverse mix of stakeholders, including utilities. There are representatives from each of the investor-owned utilities. There are representatives from municipal utilities. There's also representatives from regulators and ratepayer advocates. There are members from the PV industry spanning manufacturing, distribution, installation, construction. So we have a very diverse mix of people within this PV collaborative, and I'm here speaking on their behalf.

Because of this diversity, it's not often that we reach consensus, but I'm pleased to say that last week we had a collaborative in the Los Angeles area. We discussed the PV specific proposal with respect to the disposition of the AB 1890 funds.

We have a very detailed proposal that we'd like to submit to you on the 26th. We will spend the time today to give you specifics as to what is contained in that proposal.

What I'd like to do, we actually have three of us here. I'd like to introduce Tom Jensen first. He's with Strategies Unlimited. It's a California company that looks at the PV -- keeps track of the PV industry on an international basis.

Then I will speak about the specific PV proposal.

And then following we'll have Richard Sowter from BP Solar, a subsidiary of British Petroleum.

So, Tom, I'll give the mic to you.

MR. JENSEN: Thank you, Howard.

My name is Tom Jensen. I'm a market analyst with Strategies Unlimited. It's a market research and consulting firm which serves the global photovoltaic industry and also emerging technologies and semiconductors.

To start off with the first slide, if I could, we serve a global client base in four continents, manufacturers, distributors, utilities and government agencies. And through that work we compile market data.

This is where the photovoltaic industry has been to date, starting in 1985 with 18.7 megawatts, 1997 we're forecast 83. So the market in a little over 10 years has quadrupled. And the market growth in recent years has been dramatic.

In 1995 it grew 18 percent, which was the largest annual market growth in six years. In 1996 we'll be slightly below that. In 1997 will be dramatically more.

And to move on to where the market is heading, 1997 will be the first year where photovoltaics in terms of its global shipments surpasses 100 megawatts. The market growth could be the largest in a decade and next year, and continue in the future for a number of reasons.

What we forecast is that there are two scenarios at work here in terms of what exists in the marketplace today.

Under a business-as-usual scenario we can see basically a doubling of growth every five years: 72 in '95, 140 in 2000, 310 in 2005, then increasing to 800 megawatts. And "business -as-usual" being defined as what we're seeing now, about 14 to 15 percent growth over time with the existing mechanisms in place.

Under an accelerate scenario, where there are efforts made toward financing, market education, incentives for the end user, we can see the market increasing dramatically.

Now the California program is not considered under this accelerated scenario. If the California program were to be enacted for photovoltaics, as Howard is going to detail later, you can see that market growth expand even further.

If this program were to go forward as proposed, the California demand within this state alone will triple. The curve that you see before you here will move forward in time. Two hundred and five megawatts could probably be reached in a sooner timeframe. Six hundred megawatts could be reached by 2005, or possibly even 2002, 2003, depending on what mechanisms are in place.

But the industry is poised toward a new period of commercial growth. And AB 1890 provides an opportunity window for the industry to move forward.

PRESIDING COMMISSIONER MOORE: You don't see the slope changing, you just see the curve shifting?

MR. JENSEN: Correct, correct. The slope will remain consistent.

In terms of the infrastructure within California, here is a listing of some of the majors. We don't list all the distributors, otherwise you wouldn't be able to see anything else, but to point of a few highlights if I could. Just in overview, California is truly the leader in the world in photovoltaics. Twenty-five percent of the global shipments are coming from California manufacturers. And that number will increase in the coming years.

In distribution and sales, 27 percent of the total US volume comes from California distributors.

In terms of California utilities, nearly 15 megawatts has been installed here. That's the most in the world, as well.

Employment levels, as of now, about 800 people are employed directly in the photovoltaic industry. That's going to expand by at least a hundred to 200 by the end of next year. There's a number of manufacturers that are coming in. We will be hearing shortly from Richard Sowter of BP Solar, which just spent $7 million to acquire a facility in Fairfield. You can see BP Solar there on it.

The world leader in photovoltaics is Siemens Solar. They are based in Camarillo in Southern California. And BP is number three in the world. And so there are some significant players coming into California, major multi-nationals. There's a number of strong players that are coming in that can seize the opportunity, if it's created.

In terms of the manufacturers that are also very active, Solec is moving down the road in Orange County to Torrance. In the Bay Area we have PowerLight in Berkeley, PVI in the South Bay along with Sun Power. Ananda Power is in balance of systems in Grass Valley. Grundfos Pumps is a water pump manufacturer near Fresno. And Amonix is a concentrator technology. Shurflo is also a water pump manufacturer.

So there's a strong manufacturing base that exists in the state that can really take advantage of this program.

The distributors that are out there now, that's also a very growing industry component. Solar Electric Specialties, which is based in Santa Barbara, and also up in Ukiah is the number two distributor in the United States. So California has a number of resources to bear here.

And, in addition, there's some cross-pollination that can take place. As photovoltaics becomes more cost-effective it can play more of a role in telecommunications, particularly. And can help some California companies in that regard, especially in PSC.

Moving on to where the module pricing is going in the industry. Here's the history over time that we have projected. The higher of the two curves is all power modules. And that would be defined as any photovoltaics outside of modules for calculators and watches, small indoor applications. So the power modules in

1985, $7.36 a watt. Today it's probably in the range of about $5.

And the smaller curve that you see down below in black is the large modules sold in quantity. That's for volume bulk sales to the major distributors, of which there are several in California.

The price has dropped dramatically over the past few years and is now in the range of about $4 a watt and in some cases under. And that curve will continue to go down as the manufacturers have an opportunity to scale up, and there are more markets that can be accessed for various applications.

As of now, telecommunications is the primary application for photovoltaics, but there are other markets that are becoming more accessible as that cost curve continues to move down. And there's a number of mechanisms going on in the world that can make that happen.

And to give you an idea of what's happening elsewhere, Japan is the most active market in the world right now in terms of policy. They have a declining PV subsidy that was at $8 a watt in fiscal year '94. It is $3.60 a watt in fiscal '96. They also have a low-interest financing that's available through select manufacturers with Fuji Bank. There's a market education program going on the manufacturers and the government, particularly MITI [phonetic]. And active federal government promotion for government agencies to become more involved in utilizing photovoltaics in the infrastructure.

In the case of Japan, that primarily translates into building integrated photovoltaics, where you would put it on buildings and various structures, or also along freeways where PV has been used, somewhat in Japan, more so in Europe for sound barriers. And it's an effective of using PV within the infrastructure.

The results of the Japanese program of the last three years, it's the largest program in industry history. There's already been 17, 18 megawatts installed in Japan directly as a result of the subsidy program that's been combined with finance and education. As long as the tools of sustainability are in place, even though the subsidy continues to go down, the market demand goes up.

If you look at the fiscal numbers in the parentheses, look at the number of applicants in Japan that has gone up over time. A thousand applicants to the program in fiscal '94, you start to educate the community about it, 11,000 applicants to the program two years ago. That's the power of market education in photovoltaics.

As Steve pointed out earlier, all the public opinion pools indicate that solar is the renewable energy industry that people want to get into. That's the technology they want to use, and that's very much the case in Japan. And a lot of residential systems are going up as a result of that.

The manufacturers within Japan are doubling their capacity over the next three years. And there's been a significant increase in distribution investment. It's created hundreds of new jobs in Japan and will continued to do so.

In terms of Germany, what they offer is something that's more on a city basis, where city councils vote to have a one-percent surcharge placed on electricity bills. And that money goes into a fund which pays 2 D marks per kilowatt hour for all PV power fed to the grid for 20 years. It allows them to basically recover the full cost of the system in about 15 to 20 years.

Now the $1.35 per kilowatt hour sounds very high by California standards, but keep in mind that the solar capital of Germany is Munich which is the solar equivalent of Seattle, therefore they're not getting as much insulation coming down, therefore the price is much higher.

There's other programs that Greenpeace is promoting, Greenpeace's Cyrus [phonetic] Program, which is roughly $11 a watt for a standard system. They've already got 4,000 people signed up for that.

There's a lot of activity by the environmental groups in Europe who take a different approach than we have here. They become more proactive in trying to get the market going forward, and therefore they've been very active in promoting this, not only in Germany but Switzerland and Australia as well -- or, Austria as well.

There's also low-interest financing that's provided through Deutsche Alisuiss Bank [phonetic] at 3.3 percent for 15 years. And an active promotion -- again, the tools of sustainability are education, finance and reducing the system so that people can find a way of recovering their cost, or overcoming the first cost barrier. And that's what these programs have proven to do.

The market volume in Germany has increased dramatically. When the program for a rate-based incentives, the 2 D Mark Program began in 1995, people didn't trust it, and so it took a while to take hold.

Once they kind that they could really get that incentive, the market jumped from a hundred kilowatts to two megawatts. And that two megawatts is expected to continue for the next few years, at least.

Therefore it's creating a sustainable track of volume. People know they can count on that program being there. It's in place for 20 years. There's also financing. There's also education. There's also politics behind it. So there's a lot of drivers that are moving that market forward.

The Greenpeace Program is expected to add another 2.5 megawatts or so, possibly two next year and into the future.

The economic impact: Three new manufacturers have come into Germany specifically because of this new opportunity, and said we want to get in here and see what we can do with it. And there have been some American joint venture partnerships that have been formed as a result. Astro Power, a major manufacturer on the East Coast, has gotten together with Solar Fabrik [phonetic] in Germany for a new partnership. And there's more that are expected along the way.

So the key in terms of what the photovoltaic industry would be looking for from AB 1890 is, first: How do we accelerate the market demand so that we can get the end user motivated to buy photovoltaics.

We have to educate them that photovoltaics exists, that here the applications that it can be used for. Here's the financing elements so that it's not so prohibitive to buy it upfront, and what would the result of those tools of sustainability be.

Under what Howard is about to tell you, 50 megawatts could be installed under the Greenback Program that you'll be hearing about. You would likely see another 15 megawatts in solar farms. And probably a spillover effect in the marketplace of another five to ten megawatts just from the market education beyond what's already being done through AB 1890 specifically.

And so I'd like to bring Howard back up to talk about the program that we're proposing for AB 1890.

Thanks.

MR. WENGER: Thanks, Tom.

Well, Tom has given you sufficient background, but I'll just belabor it by saying that PV has a very robust industry already that exists. It's been fueled by international, domestic markets, primarily in the off-grid sector, but as Tom described, the grid-connected sector is starting to make a big difference in the industry.

California is the world leader. The industry is here and it's ready to respond to the AB 1890 funds and use it in a way that's going to expand the market to sustainability.

We've proven beyond a shadow of a doubt that PV is technically ready. These products are off the shelf. They're commercially available. And grid-connected PV systems of all kinds exist. There are hundreds of them. So there's a sales track record.

The number of advantages to PV, it's one of the highest valuable renewable technologies. And I won't belabor that point, but even so, it has all these great features, so what's the problem? Why don't we see these things on every rooftop?

The problem is high cost and a lack of financing and intermediate-term low-cost financing. This is a system cost curve. Tom presented the photovoltaic module cost curve. This is the grid-connected system cost curve.

And what it shows in constant real 1996 dollars is that in 1984 PV costs about $19 per watt, or $19,000 per kilowatt. In terms of cents per kilowatt hour, that's about 60 cents per kilowatt hour levelized.

Well, today, PV on a turnkey-system basis, volume-purchase basis for residential, commercial and distributed end-of-line applications is about $6 per watt, or about one-third of what it was in 1984, which is equivalent to about 20 cents per kilowatt hour, depending on the cost of money that you assume.

That means that it's going to be very difficult for PV to compete on the grid at 20 cents a kilowatt, even at the retail sector.

We've drawn a line here. It's this $3-per-watt target market price. That's not a magic number. That's not the golden number. But it's a target at which we believe that sustainable markets will exist. And they could exist before that line, but that's the price point that we're shooting for.

And so you see at the year 2004, the dotted line shows projected costs based on the historical, actual prices of PV intersecting the $3-per-watt line at 2004. So we're a ways away under a business-as-usual scenario.

The next slide. But what we're proposing to get there in 1998 instead of 2004 is a cohesive program for photovoltaics:

A Greenback Program, which is a cute way of saying a direct consumer rebate program that would go directly to consumers on a declining basis. And I'll provide details on that later in the presentation;

A revolving loan fund that makes available low-interest, long-term loans to finance PV systems. And it will be used in concert with the Greenback Program;

And then a quality assurance and green marketing element, that we want to ensure that the systems that go in are of high quality, that licensed contractors are used, that consumers' interests are protected.

Well, lets talk about this $3-per-watt target and where it comes from and why we talk about that so much. There are a number of studies that have been done, and I don't want to go into the details and results of these studies, but I want to present some results from a couple of them.

This is one study that looked at the key economic drivers for residential photovoltaics on a state-by-state knowledge basis. It looked at electricity rates and overlaid them on PV energy production, identified what the tax incentives were in each state and whether or not net metering was available.

Red connotes that you have high electric rates. So the orange states have high electric rates. The pink states have medium, and the blue, low. Energy production, red is high, blue is low. Tax incentives, if it's colored, it has incentives. California doesn't have any state solar incentives, but there is a 10-percent federal incentive, solar tax incentive for commercial systems. And then net metering availability. The red ones have net metering.

What we did is then filtered all this information into a cashflow financial model. I want to make sure you see the Y axis on that. And what we did is we determined what the breakeven price of PV was for each one of these states.

The breakeven price is the price at which the residential consumer would get a 30-year payback. It doesn't mean that the consumer would invest at that PV price level, but they would get a 30-year payback on their investment.

As you see, Hawaii is the number one state at $7.50 a watt, which means that cost-effective grid-connected PV could actually be installed in Hawaii today.

California is second at about $4.50 to $5 a watt breakeven point.

You could see on a $3-per-watt basis the market begins to open up quite a bit. And this is one of the reasons why the $3-per-watt target is selected.

Another reason why it's selected is on studies that have been done for utilities on end-of-line distributed applications. And here we're showing the value in dollars per watt, again, for

11 different utility studies of distributed photovoltaic systems.

The first three bars are studies for California utilities: PG&E, Southern California Edison and SMUD. And you can see when you add in the energy capacity benefits and the distributed benefits -- by that I mean voltage support, electric loss savings, environmental benefits, all the benefits you get from locating PV near customer load centers -- you double the value of PV, and you're at about a $3-per-watt level.

The Utility Photovoltaic Group, a consortium of 80 utilities, provided these estimates of what the market potential would be at these takeoff points for PV. For residential buildings, at 3- to $3.5-per-watt level, you're looking at 200 to 250 megawatts of market potential and so forth on down the line, so that at $3 per watt, you're at the three-gigawatt level of market potential.

So what we propose is a declining series of rebates. I'm showing this cost chart again. But in 1998, coinciding with the AB 1890 funds, we're proposing that over a six-year period you have a declining series of rebates beginning at $3 per watt and ending at 50 cents a watt. This will provide a reliable basis for the industry to know that, okay, we know that these incentives are there. They can gear up. They can manufacture. They can market and reach consumers. It's very important to set this schedule up ahead of time.

It's also important to allow some flexibility should the market respond differently, should the demand respond differently or should the price of PV systems be different that what we anticipated.

So what we're attempting to do is hit this target market price right from the get-go in 1998 on into the future, and maybe even earlier, so that we can achieve significant penetration with PV.

So at $3 per watt, what this next chart shows, is as a function of the loan interest rate, when we're talking about a revolving loan fund to offer low-interest loans directly to consumers, let's assume that that interest rate is five percent and the PV system price is $3 per watt, the levelized cost of electricity, PV electricity, is just over 8 cents a kilowatt hour.

What we've put over that is the band of retail electricity price. In a restructured world, we don't know where that's going to be, but let's say it's between 8 and 14 cents for residential and commercial customers, we're at the low end of this band. And so we think that PV is going to be very competitive for direct consumer applications.

Just sort of building on that thought, we've now got here is customer payback as a function of the retail electricity price. And now your guess is as good as mine as to what the residential electricity price is going to be a few years from now, but let's say it's 8 cents a kilowatt hour.

If we don't have this rebate program, the payback is going to be greater than 30 years. If we have a rebate and a five-percent interest loan, the payback is around 22 years. This is assuming that electricity prices are around 8 cents per kilowatt hour.

Some of the IOUs might have a tough time doing that, but I think they plan on achieving that, but we'll just have to see.

But you can see at present prices, this same consumer, if you're at 12 cents a kilowatt hour, with a rebate, they're essentially saving money from day one. They have zero out-of-pocket expenses from the very beginning because we're offering financing for these systems.

Okay, next slide.

To give a few details on what we're calling this Greenback Program, this rebate program. Again we're talking about direct consumer rebates. And it's conceivable that these rebates could also be used for IPP style smaller hundreds of kilowatt types systems or energy service company approaches, where you're leasing systems to customers. It's conceivable that you could incorporate the financing of the rebates for these types of approaches. But what we're targeting right now is for a consumer, a direct consumer purchase of PV systems.

And what we're showing is that the rebates again decline over time, starting at $3 per watt down to 50 cents a watt. These are numbers TBD, to be determined, and we will have details for you on the 26th as to what the total dollar amounts we're talking about. But the rebate levels are fixed. It's a matter of how many megawatts of eligible capacity are we going to assign to each of those levels.

So what we propose in the year 1998 is that two megawatts be available at $3 per watt. Now that might be taken up in the first six months. It could be taken up in 18 months. We don't know, but the approach is to first use up all that $3-per-watt money until the first tier of the two megawatts is totally subscribed, and then March on down the line weaning the industry away from these rebates to full sustainability.

There are a number of details with respect to administering these Greenbacks, these rebates. We need to figure out exactly how they're going to be administered. Does the money follow directly to the consumer or through are consumer to the supplier. These kinds of details need to be worked out.

We want to put in some mechanisms to accommodate the rebate levels to the prevailing market conditions. As I mentioned before, we could tailor the rebates for different kinds of applications. And one of the things I want to note is that we're going to limit the shelf life of the rebates so that there isn't gaming and hoarding of Greenbacks or rebates. If they're not used within a specific time period, then they're going to be put back into the rebate pool.

Now I want to move on to the revolving loan fund that works with the rebate program. The major barrier to PV and a lot of renewable energy technologies is a lack of financing because all of the capital outlay is front loaded. And there isn't a real good mechanism for low-cost financing and longer-term financing for renewables.

And so what we're advocating is a low-interest loan, revolving loan program. It could be five percent. Maybe it's four percent. We haven't quite determined what the right number is. Some more analysis has to be done. Again, the initial target is smaller systems. And one of the key features is to try and bundle these loans and sell them to recycle the funds. And let me tell you what we mean by that.

This weird looking table attempts to convey the concept. These are preliminary -- these are draft numbers. But suppose that you have a total of $30 million for this revolving loan fund with seven and a half million dollars coming from AB 1890 in '98, '99, 2000, 2001.

Well, in the first year, you have seven and a half million dollars worth of funds for loans to be made, for new loans to be made. The idea here would be if you have a number, hundreds perhaps of these very small loans for 10- to $20,000, you could bundle them up and sell them to a large purchaser of bonds who could then resell them on the secondary market as tax-exempt bonds.

So that's what we're showing here is that let's say that you have seven and a half million dollars worth of loans, you bundle them up, you package and you sell them for seven million, just to say that the company that's buying them, that's their profit margin, that money, the seven million that you sold it for, goes back into the revolving loan fund, so that you add seven million plus seven and a half million, and all of a sudden you have fourteen and a half million to make new loans.

You continue this cycle on out. And what you have is a self-sustaining revolving loan program where just in a period of four years, $30 million creates $70 million in loans and is self-sustaining.

So in summation. what we've proposed is this three- or four-prong approach that is intended to work together:

A Greenback program with consumer rebates to lower PV system price to the market level. These incentives will decline over a period of time;

Low-interest financing to get over that capital cost hurdle;

A revolving loan concept that we need to explore further. We've had preliminary discussions with Staff about this concept.

And there is an indication that there is some promise;

A quality assurance and green marketing program that we think is crucial. We don't want to repeat any of the mistakes made by the solar industry in the early '80s. We're going to make sure that safeguards are put in place to prevent that. We think we have a much more mature industry to respond to this growing market now, but we think that mechanisms do have to put in place to ensure quality components, licensed contractors and realistic system ratings;

And, finally, a professional statewide advertising and public education campaign. This is crucial. The PV industry has not done a very good job in marketing to the grid-connected sector. And so we feel that initially we need to partner with the industry to help market to the grid-connected customer. And so we're advocating the some of these funds will go towards marketing.

And, again, we'll have all of the details for you -- or additional details and written out for you on the 26th.

Thank you.

PRESIDING COMMISSIONER MOORE: Thank you. Just one quick question before we go to Richard Sowter, and that is did you add up the cost of the Greenback Program? Once you start issuing all these rebates, what's the cost out of the 540?

MR. WENGER: Right.

PRESIDING COMMISSIONER MOORE: Five sixty?

MR. WENGER: We -- there have been some -- oh, no. No, no, no.

There have been some allusions to numbers presented earlier by Don Aitken for this entire PV program to be around a hundred million dollars. The final figure will be presented on the 26th.

PRESIDING COMMISSIONER MOORE: Okay.

MR. WENGER: That's what we're looking at.

PRESIDING COMMISSIONER MOORE: Richard Sowter.

COMMISSIONER SHARPLESS: Could I, before he --

PRESIDING COMMISSIONER MOORE: Oh, sorry. I thought Richard was going to complete the --

MR. SOWTER: I'm partially disposed.

COMMISSIONER SHARPLESS: I just have a really quick question.

PRESIDING COMMISSIONER MOORE: Go ahead.

COMMISSIONER SHARPLESS: Is this part of emerging?

MR. WENGER: Absolutely.

COMMISSIONER SHARPLESS: Okay. So you're talking about what you consider to be an emerging technology. Part of your description sounded like we were beyond emerging.

MR. WENGER: We're beyond emerging except in one category, and that's the price. And so that means that there really isn't a -- when you look at the total grid-connected market in California, there might be 400 or 500 residences that have these kinds of systems right now.

Through this program, what we intend to get is something more on the order of 15,000 residences.

Thank you.

PRESIDING COMMISSIONER MOORE: Mr. Sowter, come on down.

MR. SOWTER: My name is Richard Sowter, and I head up BP Solar, Inc. here in the US. Thanks to Howard and to Tom.

I won't stand behind the microphone in case everyone can here me a little bit -- oh, okay. I'll come back so the transcriber can hear me.

I head up BP Solar, Inc. BP Solar, Inc. is one of the largest solar companies in the world. We're a subsidiary of BP America. BP America is one of the largest companies in the US. We have assets of $10 billion, annual sales of $16 billion, and we employ 15,000 people.

Recently we announced on October the 16th an investment in a manufacturing facility in Fairfield, California. Tom alluded to the figure of seven million. In fact, seven million was the figure just for the manufacturing equipment. We've also purchased building and land, which is considerably in excess, so it's a much larger investment.

This facility in Fairfield, California, is the most modern thin-film manufacturing plant in the world. It's something that Californians could really be very proud of. And that has a nameplate capacity of 10 megawatts.

You may wonder why BP Solar is in this business. Well, really BP, -- or, rather, BP is in this business. BP is an energy company. Now he believe that solar is a business that will be material to our energy business. And by "material," we mean that it will be a substantial business. And we believe that it will be a sustainable business.

We are not interested in investing in a business that is subsidized, and that's the way that that business continues. We really believe in this business.

One of our fellow energy companies, Shell, had published a much acclaimed report that a substantial part of their business will be generated by renewable energy, by photovoltaics in about 20 to 30 years.

We support wholeheartedly the market-based mechanisms that have been outlined here. We do not believe that a mechanism that subsidizes the industry directly is the most effective use of the funds. We believe that a market-based mechanism will stimulate the market, and the market will stimulate the investment of companies like ourselves. And we believe that through competition, the competition will stimulate lower prices in a sustainable market. And that's our position and that's our support for AB 1890.

Thank you.

PRESIDING COMMISSIONER MOORE: Thank you very much.

MR. MASRI: Marwan.

MR. MASRI: Could you just clarify what you mean by a market-based mechanism? What does that mean to you?

MR. SOWTER: Well, as the presentation, as was outlined in the presentation and the presentation that we support, a market-based mechanism is really where you put the money in the hands of the person who is going to be using the power, or who is going to be spending the money to purchase that power.

MR. MASRI: The consumer.

MR. SOWTER: The consumer, very much so.

And we struggled with sort of names to call this. You know, whether to call it a rebate or a subsidy, but the Greenback has a good synergy because it's green and it's money that comes back.

And really what the Greenback Program is going to do, it's going to kickstart this business. We know that the business is going to be there at some time in the future, but AB 1890 gives our industry a tremendous opportunity to really kickstart this business.

And as Tom showed examples, these sort of programs in

Japan and in Germany have really kickstarted that business. And we're very excited about the potential that AB 1890 offers. And so I hope that answers your question.

PRESIDING COMMISSIONER MOORE: Let me just explore the comment that you made, because I'm not quite sure I understood it. Do you suggest that the industry would mature in 23 to 30 years range, 20 through --

MR. SOWTER: Oh, no. The range of 20 to 30 years.

PRESIDING COMMISSIONER MOORE: Twenty.

MR. SOWTER: This was the report that the Shell Company had written. And at that stage they believe that the economics was such that PV will turn into the energy solar business, would actually be generating as much as 50 percent of their revenues. And on a worldwide basis, if that was translated into BP, BP worldwide, we have annual sales of $56 billion.

So it's a figure just to give you a sort of rough size of our commitment to this business, and really where we believe it's going. And the opportunity that AB 1890 really presents, if we have the opportunity for a market-based mechanism.

PRESIDING COMMISSIONER MOORE: Good. Thank you.

MR. SOWTER: Thank you.

PRESIDING COMMISSIONER MOORE: Marwan.

MR. MASRI: I'm sorry. I have a quick question for Steve.

PRESIDING COMMISSIONER MOORE: Sure.

MR. MASRI: And I think I asked this question before. I was not sure who the sponsors of your proposal are. Could you make that clear for us?

MR. KALLAND: In which industries, which technologies?

MR. MASRI: Who is supporting -- yes.

MR. KALLAND: The Solar Industry Association is --

MR. MASRI: Which companies?

MR. KALLAND: -- representing here today a number of companies that are operating in California. And Howard and Tom gave a list of the various companies on the PV side, but we also do have several companies that are involved in the solar-thermal electric side that are represented in this umbrella proposal, which I introduced, and these other people have fleshed out the individual pillars that are holding up maybe the roof of the proposal, which is what I presented.

MR. MASRI: Does it represent all solar electric companies in California?

MR. KALLAND: Including the piece that talks about the emerged technologies, at this point, yes.

MR. ALVAREZ: Let me ask maybe a more direct question. Does it include the SEGS projects, the SEGS?

MR. KALLAND: My understanding right now, and I perhaps should defer that until next week, but my understanding is that right now, yes, this proposal does include those groups.

MR. WILLS: If I could make a -- say to Steve.

MR. KALLAND: Yeah. Eric's --

PRESIDING COMMISSIONER MOORE: Do you want to introduce yourself?

MR. WILLS: Yes. My name is Eric Wills. I'm president of Dagget Leasing Corporation [phonetic]. We're a part owner and operator of SEGS I and II. And we're representing SEGS I through IX, which is 354 megawatts and about $1.5 billion of capital investment.

Steve just got called in at the last minute to present this because Les couldn't be here. The SEGS right now are a kind of discussing with a lot of parties. So although we have reviewed many proposals for many people, I think it's probably premature to say that we are signed up. So I don't want to jeopardize our discussions with others right now --

PRESIDING COMMISSIONER MOORE: So it's safe to say that SEGS is as so many of the pieces of this are, is a work in progress at this point?

MR. WILLS: A very work in progress. Hopefully a lot more developed shortly.

PRESIDING COMMISSIONER MOORE: We wish you luck.

MR. WILLS: Thank you.

PRESIDING COMMISSIONER MOORE: All right. I'm going to switch gears then just a little bit. Thank you, gentlemen, for your presentation. And we'll expect some more detail documentation on it.

I would ask you the same favor that I asked of the others earlier, and that is that you give the Committee members the advantage of at least the night before for the detailed stuff, so that we can ask you relatively intelligent questions the next morning.

MR. WENGER: You will have it.

PRESIDING COMMISSIONER MOORE: So that's the 25th. We try.

MR. WENGER: Maybe even the 24th then.

PRESIDING COMMISSIONER MOORE: Thank you.

COMMISSIONER SHARPLESS: That would be better.

PRESIDING COMMISSIONER MOORE: All right. I'm going to switch gears. Now I've got folks that are not aligned in a group at this point, so I'll call you individually, and you can offer your comments. Alan Purves -- these are in no particular order.

MR. PURVES: I have facts supporting another proposal. I would defer to that.

PRESIDING COMMISSIONER MOORE: Oh, all right. I guess you are. Public development. So that's -- okay.

So Jim Kennelly.

MR. KENNELLY: Kennelly.

PRESIDING COMMISSIONER MOORE: Okay. Jim, come on up.

MR. KENNELLY: I'm Jim Kennelly with Project Development representing the Counties of Orange, Sonoma, the City of Sacramento and NEO Corp. I might add that Project Development is not a lobbyist, not in that business. Actually my business is the development and construction involved in the fuels projects.

The proposal that you have and hopefully had a chance to see on Monday, yesterday, is made by these counties and cities on the supposition that the Legislature said the free ride's about over. The amount of money here that we're talking about is very small. And we view that as the Legislature saying, "Here is some seed money to continue, but you're being weaned of the process."

And I think it was Tom Hinrichs that did some mathematics on this, and it comes out to .48 cents, so roughly we're that being a half-a-cent if you took all the kilowatts that are being generated and divided it into the money. So our proposal is based on that understanding. That might be wrong, but it looks pretty clear to us.

I'm going to tell you about the way we've suggested this being divided into three sections: The typical existing project, money for new projects, money for emerging. We also have some money set aside for marketing of renewables.

As far as the existing go, we suggest that the amount of money here, which is about 40 percent, the way we have it divided, be set aside and used over four years. And it would be divided into quarters, so there would be 16 allotments of that 40 percent, which is roughly $13 million a quarter.

And a new project or an existing project, which we've defined as a project that is online and generating on or before the 31st or the 30th of December of '95. Those projects at that point are existing projects.

At the end of a quarter, they would submit the amount of kilowatts they've generated and they would be paid a portion, a direct portion of this money, each quarter.

And the question comes up about, well, you know, this is supposed to be market driven. The Legislature was very clear on that.

We're also assuming that when these projects went into being in the late '70s and the early '80s, they were competitive. They were market driven. Something's obviously changed, but the fact was they were market-driven projects. And they exist today; we're assuming they're profitable today.

So we're saying, all right, we were going to continue these projects for at least the four years. In each quarter there will be an allotment of this money to sustain them.

We suggest that any of these projects are eligible for the state or federal tax credits that they get now and they may get in the future. We think that they should go after additional financing. They can look for benefits either in support of services or actually in funding from manufacturers, engineering contractors, from vendors, associations, cities, counties, wherever the money can come to supplement what we've got here.

That's basically what we would do with the existing projects.

We'd also say that any project that met the test, that is they were generating on or before the 20th of December of '95, if they want to restart up, they could do so and they would become an existing project, if that's what they would like.

The only prohibition we have in there in the qualifications would be that they cannot be -- they have to be over the cliff on the standard offer. They can't still be on the schedule of projected costs. But that wouldn't be until this project started, assuming January 1st of '98, so it probably affects very few.

The second part in the case of new projects, we're recommending that you allot 48 percent of the money to new projects. New projects or any projects that we deem are renewable and that come online after the 20th of December of '95.

What we suggest here is that from this point on they're strictly market driven. To qualify for this subsidy, if you will, you bid. We're recommending that there will be bids every six months, sealed, and the price will be just cents per kilowatt hour. If there are any perceived externalities, environmental benefits, those are to be included in the price. They lay the envelope down. That's the bid.

And, again, these people are encouraged to seek other financing, to seek support from association, from vendors, whatever it might take to make that project happen.

Once you would win the bid, you would have 18 months to be online with your project. And during that time you'll post a bond for the amount of your bid. If you default, the money goes back into the pot to be reallotted to other projects and future bids. And the proceeds of the bond go back into the pot.

And, again, it's strictly market driven. There is no tier. There is no “Whose green is greenest?” Strictly competition.

For the third portion, we'd recommend that 10 percent of the money be set aside for the emerging technologies. And, again, the definition here we've got in our proposal, but that's open to what people think it might be. But they would perform in much the same way. That is, there would be a sealed bid.

The difference here would be that along with the bid in cents per kilowatt hour for the emerging technology, whatever they believe they needn't support, there would also be a technical presentation in that sealed bid.

We're suggesting that, for instance, the CEC form a board, an equal number of their own and members from private industry, that will then evaluate these proposals and basically the technologies. And then they'll make the final decision.

And there again the bids would be happening every quarter, and would be based strictly on the market and what they perceive the market to be.

And, finally, there's two percent set aside for strictly marketing. And we would look here to, again, let's say that the CEC would solicit bids from competent advertising people, marketing people who would then go out and work with the industry and actually produce pieces of information. They could be radio spots, they could be TV spots, whatever they are, to enhance the marketing of renewables.

We would also be looking, as the people that spoke earlier this morning here that this money would actually filter right down to and get to the markets that are created for renewables.

That's basically the program. I would like to add this that is important, the existing funds will go to the generators. That is, every quarter, whoever submits their kilowatts generated, that money goes to them to support the supply side of the program, the generation.

On the new projects, the money goes to the consumer. This is going to the consumer only, not to the generator. So if *X* project bids in and let's say they win the bid at 3 cents, the 3 cents goes to whoever the consumer is out there that's buying that power, whether it's through a marketer or whether it's through a contract direct with the people that put out the bid.

And the same would hold with the subsidy that goes to the renewables -- or, excuse me, the emergings. There again the money that is allotted through the bid process will go to the consumer, to the purchaser of the electricity.

What do you think?

PRESIDING COMMISSIONER MOORE: Great. I'm ready to vote.

MR. KENNELLY: Okay. Let's vote.

PRESIDING COMMISSIONER MOORE: Mr. Purves, do you want to add something to that?

MR. PURVES: My name is Alan Purves from Leland [phonetic] Gas Recovery Systems in Newark, California.

Like Jim I'm not a politician. I'm not a lobbyist. And as may become evident, I'm certainly not a diplomat.

I've been attending these hearings including the PUC set that preceded them to educate myself, as a businessman, so that I could make a recommendation to the board of directors of our company regarding future investment in renewables, specifically in

California.

And what I was hoping I would see developing is a simple and understandable and a certain system that we could judge a business risk on. And I want to support, first of all, the aspect that we in the business take the business risk and make the business judgment.

And I think the bidding mechanism allows us to do that. It gives us a risk that we can manage, and allows us to price our bids accordingly.

I don't see any advantage in regulating a process that is itself part of deregulation by stipulating that certain bands be allocated, certain funds. I don't see much advantage in supporting technologies that currently are not profitable and don't have a future as a renewable power.

Lastly, I would like specifically to support the landfill gas technology as being a qualified resource. There have been some suggestions in other proposals that we have external funding from tipping fees and federal supports. I don't think that's appropriate.

The energy produced from the landfill gas is an independent business, and I think should be judged on ensuing merits.

Thank you.

PRESIDING COMMISSIONER MOORE: Thanks.

Jan.

COMMISSIONER SHARPLESS: Yeah. We haven't had a real opportunity, although you sent it in yesterday, to get into a lot of depth with your proposal. But I did have some just sort of brief questions I wanted to ask you so that we would be able to give it more attention.

MR. KENNELLY: Thank you. I'd like that.

COMMISSIONER SHARPLESS: On your 40 percent for existing, how do you see that happening? We know that if you divide the $216 million, which would be over a four-year period, by the number of existing facilities, that wouldn't amount to much, would it?

MR. KENNELLY: Apparently about a half a cent.

COMMISSIONER SHARPLESS: So what would we be accomplishing by using this first-step mechanism in your proposal?

MR. KENNELLY: It puts the heat on those that need more money to get more money somewhere. It gives them the seed money to say, am I just about there, as some claim they are and therefore they can stay in business, or they'll part this world.

COMMISSIONER SHARPLESS: Okay. So you think that's enough of an incentive for people who might be in a class that maybe aren't real near being competitive, but aren't lackards and are somewhere in the middle that might need more than a half a cent in the next four years?

MR. KENNELLY: Yeah. I think it's really tough.

COMMISSIONER SHARPLESS: Okay.

MR. KENNELLY: And it's either now or later.

COMMISSIONER SHARPLESS: I feel your compassion.

MR. KENNELLY: Yeah.

[Laughter.]

MR. KENNELLY: Life is hard and then you die.

COMMISSIONER SHARPLESS: Good. Damn the torpedoes and full speed ahead.

MR. KENNELLY: Yeah.

COMMISSIONER SHARPLESS: Okay. So I am getting the essence of your 40-percent proposal here. Everybody gets the same amount, sink, swim, survive or not.

MR. KENNELLY: You know, this came directly, and it's been two years now since we actually spoke before the PUC in the first hearing in Los Angeles. And the cities and counties were absolutely incensed over the BRPU. And they said: This isn't going to happen again. We're going to get involved in the process and it's going to be fair. It's going to be undiscriminatory treatment of all technologies.

Why should in this case three million people, taxpayers/ratepayers get some kind of a different shake because they took the same risks? Now somebody else's management hasn't managed well, then sooner or later that comes to an end. It might be sooner now or it might be later.

COMMISSIONER SHARPLESS: Well, I notice you excluded some people out of your renewables.

MR. KENNELLY: Not intentionally.

COMMISSIONER SHARPLESS: Hydro? It seemed real intentional when I read it.

MR. KENNELLY: Okay. Yes. Yes, yes, yes.

COMMISSIONER SHARPLESS: Small hydro.

MR. KENNELLY: All hydro.

COMMISSIONER SHARPLESS: All hydro. But small hydro was built into 1890, sort of. But you've excluded it.

MR. MILLER: Yes.

COMMISSIONER SHARPLESS: Given your principle it doesn't matter if they're competitive or if they're not competitive, and we should treat everybody equally, why did you exclude hydros?

MR. MILLER: I might add that Sonoma County has hydro, and they said, "No, that's okay. We don't need the support. It really wasn't meant for that." That's their opinion. If people want it different, that's fine with us.

I think an earlier speaker mentioned, and again in the two years of these hearings, there really hasn't been an outcry from hydro. And, in fact, rarely are they here. But if we want to include them, fine.

COMMISSIONER SHARPLESS: Well, I merely was asking the question to get the pure rationale. Because if you used your logic all the way through, you wouldn't necessarily exclude hydro.

MR. KENNELLY: That's right. As I said, Sonoma County has it, so they were kind of having to look themselves and say, "Gee, do we want to miss this opportunity."

COMMISSIONER SHARPLESS: Yeah.

MR. KENNELLY: But they concluded that it wasn't deserved nor needed, so --

COMMISSIONER SHARPLESS: Okay. So there's some judgment as well as some fairness in here.

MR. KENNELLY: I think that's probably true.

COMMISSIONER SHARPLESS: Okay.

MR. KENNELLY: I tried to stay away from that as much as possible.

COMMISSIONER SHARPLESS: On your 48 percent, where did you come up with 48? How did you back into that number?

MR. KENNELLY: The first shot at it was 40-40, and 15 and 5. And then during the week, which wasn't much time of kicking that around, they said: You know, that's really -- that's too much money, first off, for marketing. And second off, that's too much for emerging. So they took some off.

COMMISSIONER SHARPLESS: And how did they make their judgments on too much for emerging?

MR. KENNELLY: Just by virtue of the fact that they felt that there should be more money put into new technologies that could start now and not in some that might be four or five, six years off.

And I might add, they'd probably say: Fine. Make it 40-40, something else.

I think the underlying principles, I can absolutely say this, for these counties and cities, and several others that signed on to the EDS proposal at the PUC, the underlying support they have is that it's a bid process, nondiscriminatory and it's market driven.

And if somebody feels that, for instance, one technology or another belongs in new versus emerging, fine, because really you're all in the same boat. You have to kind of pick what boat you're going to be in.

If you feel that you're not emerging any more, then you'd probably want to participate in the new technologies. And likewise if you're in the technologies, and you say, "I think I'd have a better shot at the emerging," then that's where you should go.

But in all the cases there's no discrimination -- there's no whose green's greenest. And this argument's been going on for two years, and this is what brought these people here.

COMMISSIONER SHARPLESS: I also note that on your new, even though you're going through a bidding process, you're going to put a limit on the highest allowable bid prices, 2.5 cents per kilowatt hour?

MR. KENNELLY: I don't think you'll see that next Tuesday. That was in and out, and it'll probably go out again.

The reason for it was --

COMMISSIONER SHARPLESS: So I should save this proposal in case I like it.

MR. KENNELLY: Oh, yeah. Yeah. No. Save it. We'll bring that for you. We'll make tomorrow and talk more about it.

COMMISSIONER SHARPLESS: Okay.

MR. KENNELLY: The first proposal -- along the way it was taken out. And the reason it was in and is back in now is they said, well, what if somebody in the new technology gets in on the very first bid in, let's say, January 1st of '98. And they sense they can cut a fat hog, and they bid 5, 6, 7 cents, whatever.

And everybody said, yeah, that's a problem. That's not right. We're not trying to say all the money gets sucked up here in the first bid. We want it truly market driven.

But then as the week wore on, we started thinking anybody the it. They said, you know, all there's got to be is one more envelope on that table, when I go to lay mine up there I'm not going to know where we're at. The market's going to drive the price. So by the end of the week there was a lot less concern about the fact that we needed to have a cap, which is very inconsistent with the idea that the market's going to drive the price.

So I would say that when we redo this with whatever comments we get here and whatever refinements, that would just come out of it as a plain bid.

COMMISSIONER SHARPLESS: Another question I had dealt with the performance of the performance bond --

MR. KENNELLY: Yes.

COMMISSIONER SHARPLESS: -- that would be part of the requirement that folks would have to demonstrate -- first they have to demonstrate a power agreement within the first six months.

And then I believe concurrently they have 18 months. And during that period they have a performance bond. If they're unsuccessful in turning on their project within that 18 period time, they forfeit both the credit, or whatever the term you want to use, and the performance bond, right?

MR. KENNELLY: That's right. Now the credit would not have been paid. It would just --

COMMISSIONER SHARPLESS: Yeah.

MR. KENNELLY: It was a piece of paper that goes back in the pot.

COMMISSIONER SHARPLESS: It's a piece of paper that gives you an allowance.

MR. KENNELLY: Right.

COMMISSIONER SHARPLESS: Right.

MR. KENNELLY: But they would actually help us all fund the program because they would have lost their bond, just as you would in any construction.

COMMISSIONER SHARPLESS: What do you think the implications of the requirement for a bond would be on the various technologies? Equally the same or more difficult for some?

MR. KENNELLY: That will be market driven. Yeah, it would be --

COMMISSIONER SHARPLESS: So you haven't made an analysis of whether some technologies might have a greater difficulty in coming up with those requirements than others?

MR. KENNELLY: Well, only if the market could determine that. I don't think there's anybody here now or next week that would determine that. It'd be like saying, "Do you think on Saturday they'll sell more beef or chicken." That'll depend on the market, what the price is, what people want. Or spinach.

COMMISSIONER SHARPLESS: Okay.

MR. MILLER: Tofu.

COMMISSIONER SHARPLESS: So basically what you were trying to do was to protect the fund from spurious proposals, but you weren't necessarily looking at what the implications of these provisions would be in terms of whether technologies could actually function in this kind of market?

MR. KENNELLY: Yeah. We didn't perceive it as being any problem at all because every project, as Mr. Purves was talking about, and any of these people that have built projects, they had a board of directors to convince whether they had to post a bond or not. So you've got to get it financed and you've got to be on your way.

And only the market will determine what that is. And that would, I guess, depend somewhat on your track record.

But I don't see as that anything being --

COMMISSIONER SHARPLESS: But there's also that 18-month period that you add on top of it.

MR. KENNELLY: Oh, absolutely. You can't diddle around. This is a get-on-it-and-go. And that's what, again, we see the Legislature saying, "You've got four years to show us you can do this." Let's crank up the renewable industry. And you surely can't do that if you give people years and years.

Now there may be something different that should apply to the emergings. I don't really know. I know there's been some discussion, and this bond thing may change a little. We were saying, "Well, maybe you ought to just bid with your bond right then and there, and you got 18 most to go for it." Because likely somebody coming to put in a proposal to build a plant, whether it's wood, wind or landfill gas, they're going to know where that market is.

They may have signed up with marketers already and they may be out there selling it, or they may cut a bilateral contract, which is not ruled out of this. You can always sell directly through a bilateral contract.

COMMISSIONER SHARPLESS: Okay. We'll let the rest of the questions wait until the 26th.

Thank you.

PRESIDING COMMISSIONER MOORE: Thank you very much.

MR. MASRI: I have a couple of questions, please.

PRESIDING COMMISSIONER MOORE: Marwan.

MR. MASRI: Is that okay? All right.

One thing I didn't understand is that for new you would have the supplier bid but the consumer gets the money.

MR. KENNELLY: Yes.

MR. MASRI: And how do we know that what the supplier requires is what the consumer is willing to pay to buy it? How do we reconcile these two things?

MR. KENNELLY: Somebody's going to sell it to the consumer. Either you sell it directly or you do it through a marketing company or through an aggregator.

MR. MASRI: But it may be possible that if the supplier needs 3 cents to supply, say, PV power, the consumer require 8 to buy it. And so you give him 3 cents, he's not going to buy it. How do we deal with that? Somebody bids for the other one, receives the money, and they don't have the same requirements necessarily?

MR. KENNELLY: I don't know that it's a matter of money. It's a matter of what these people want in externalities, if you will.

We're going to have people out here marketing this. And they're going to say, gee, I'm really happy because I bought sun power or wind power or landfill gas. And they'll belly up to the bar with whatever it takes or they won't, but that's the market. So we don't have to worry about the price. It's not even a concern.

MR. MASRI: Okay. A couple of quick questions. Would you include utility existing renewables in the 40-percent money, utility-owned power plants that are renewable?

MR. KENNELLY: If they meet the test of what was in here.

MR. MASRI: Okay. And how do you think this bid system would be better than the BRPU, that you're proposing? How would it avoid the problems that you said were associated with the BRPU?

MR. KENNELLY: There's nothing market driven about the

BRPU. It's the most complicated formula I'd seen since college. And I don't remember calculus any more. I'd carry a slide rule if I could do that.

The counties, one in particular, Orange County was bidding that. And they got down to like the last week before they figured it out it was going to cost them money to bid. They had a 2-cent-per-kilowatt-hour penalty because they were using landfill gas which was supposed beneficial to the environment, and it was pressed by the EPA as a source to use, a fuel to use. That turned a lot of heads, and it made a lot of people pay attention to their calculators.

PRESIDING COMMISSIONER MOORE: Thank you very much. I was worried a little bit about being draconian or appearing draconian at the end of this, and we've now relieved ourselves of that. Whichever way we come out, it's likely to be less than that.

Bob Ellery wanted to respond to an earlier comment by Eric Miller.

MR. ELLERY: My name is Bob Ellery. I'm with United American Energy.

I wanted to talk about a couple of things today and one is the existing SO4 contract issue and the other is about, I think, a question, Jim, you had with respect to to what happens if the money isn't adequate. So I'd like to kind of give you my thoughts on both of those issues.

AB 1890 does have a provision in it that allows for an entity to buy a power contract from a utility and to get that CTC credit. And I think perhaps that's the provision that somehow got Mr. Miller off on a "we'll just give up our contracts."

It seems to me that the contracts are entered into between two independent parties and they're binding. And there's nothing that the Commission can do nor really the Legislature that's going to unwind those contracts. And I'd have discussions about walking away from our contracts, I think are fruitful -- I mean they're not going to go anywhere.

So I mean I think there are provisions that kind of could apply here, maybe a power marketer with some substance could come in and buy a contract from, say, my contract with PG&E and then accrue that CTC and then go out and market with that CTC credit. But I don't think it can be done on an individual basis.

With respect to -- although I do agree with their -- in one very important aspect, which is we need to create a market for renewable power, because at the end of the day, without creating a market none of us will survive. It's going to be very difficult for any of us to, on a long-term basis, compete with very low cost gas-fired cogen facilities.

So we do need to a create a market, but I don't think we need to skew the market early on. Because right now we all know the market doesn't exist.

There are facilities right now that could go out into market and compete. In the biomass area alone there's probably seventy-five to a hundred megawatts worth of biomass facilities ready to go online tomorrow if there was a market.

And so I'd say to Eric, "Start marketing. The power is there." You create the market. There will be suppliers of power. Okay. We need -- then I think in part of the biomass proposal is putting away some money to help seed that market, because we do need to create it.

The other reason I have a problem with the contract issue is quite frankly, and I've been there, the utilities are really not happy about the thought of cost-effective renewable going stealing their best customers. So I don't think the utilities are just going to run up and say, "Yeah, it's a great idea. We'll let you out of your contract."

I mean I have, in fact, personally said to the utility, "You say my power is over market? Great. Let me reduce load and sell it to somebody else," and they say, "No way. Not a chance."

So I think at the end of the day, the utilities aren't really all that interested in having us compete with their residential customers.

I would turn to the issue of the price and what happens if the price is not high enough to sustain the industry. I don't think you will see wholesale companies, facilities dropping offline. What I think will happen, and what I think we've seen already happening, is economic dispatch.

People with existing contracts will back down load to the point that, at least in the biomass industry, to the point that they can cover their operating cost including their fuel cost. Because although while we say that our fuel cost is $20 a ton on average, that doesn't mean that all fuel costs $20 a ton. Some of it may be zero, some of it may be 40.

So if the market price is not high enough to sustain full operation at -- you know, right now we're running in the 90-percent capacity factor, that's going to shrink that capacity factor down to the point that you can run.

Worst-case scenario I think is 25 percent. People will basically run during the on-peak period six months a year, and only run above that period if they can get fuel at a cost that covers their operating -- I mean so that their energy revenue is less their fuel expense, covers their operating cost, their incremental operating cost.

What we're trying to do with this transition mechanism is really bridge that gap to keep these facilities running at a high capacity factor to accrue the benefits, but driving toward market. And I think we've seen ourselves driving toward market.

And while we're working on other mechanisms of core shifting, I think you brought up a very interesting point, which is the conclusion I came to, which is you can't put all your eggs in one basket. You can't say this is solution, because we have no way of guaranteeing to implement that solution.

Nor do I think it's only one solution. I think there has to be a series of things that all cumulatively get us to the point we need to get to. But individually, probably none of them will get there.

And the last thing we -- just kind of a general comment, kind of following up to the guy from Bechtel, we keep saying emerging technologies equals solar. And I just want to point out that in Vermont they're building an integrated gasification combined cycle system to be a demonstration facility. So I'd like to make sure that we don't carve this thing and say "emerging equals solar."

Thank you.

PRESIDING COMMISSIONER MOORE: Thank you very much.

Orville Moe.

MR. MOE: Commissioners, thank you for the opportunity to be here. My name is Orville Moe. I'm President of Energy 2000. We're headquartered in Thousand Oaks and we're part of the Thousand Oaks Environmental Business Cluster, and a group of companies that are attempting to make an impact on various aspects of the world in energy and other areas.

We are working with ONSI Corporation on fuel cells. And fuel cells are one of those technologies that I think are specifically mentioned within AB 1890. And we took a look at the whole proposal. And I'd just like to offer some comments that the current DOE program has successfully achieved with fuel cells and why they have been a major thrust in the Department of Energy program that had a very simple formula, which was basically a dollar a watt that they were willing to put into the program, which has driven the cost down on these efficient systems.

I believe fuel cells by our definition at least are an emerging technology in that they are serial number 100 of the fuel cell power plants at 200 kilowatts was recently shipped last month, I believe. They are out in the field and they are working. And there is some over one million hours of time on those cells, on the fleet, one million operating hours.

So as an emerging technology, this is one of those that's right in there. It's a very efficient technology. Currently in above the 50-percent level for electrical generation, above 70-percent level for heat, combined heat use. And in the future, in the new technology area, there are plans on the agenda to develop gas turbine combination fuel cell packages.

Fuel cells have been able to achieve actual energy savings in hospitals, such as Kaiser Hospital in Riverside, and other hotels in other locations where they've been put in place of

25 to 50 percent, and therefore they make sense to a lot of people just as it is without any additional subsidy at all.

However, this 200-kilowatt plant is currently -- you can pick it up at the dock, at the factory for $3 a kilowatt. So there is a market. People aren't exactly beating our door down to get them, but there is a market at that level without any subsidies whatsoever.

But we're seeing is that we are looking for both a continuation of the DOE subsidies and hopefully California subsidies to bring this up to a level where this price is going to be driven well down into the $2 or less per watt. And these are, of course, this model is using natural gas. But the new systems that are online right now, and I gave your Staff a copy of one that's currently in production, in operation right now, on the East Coast, is using digester gas from sewer facilities, sewer and water treatment facilities.

We've proposed a total of three plants here in California with -- that would be a total of six units like this operating. And they're very close to making that decision. There are some additional costs.

As I said, this you can pick up for $3 a watt, but when you talk about installation of biogas systems, you're pushing the number up to 4 or 4.50 a watt. And that's because of the additional equipment that's needed to handle that.

So with over -- and I've presented a written proposal. I'm not going to go over the details, but there's an average of something like 15 to 17 million cubic feet of methane that's burned off by each plant that's in operation. And this technology could go a long way toward generating additional power, using a renewable resource and cleaning up the air that we breathe.

In addition to that at Edwards Air Force Base, there's a combination cycle machine in place that's using hydrogen generated from PV, photovoltaic electric input, decomposing water into hydrogen, which of course serves then as fuel in the dark cell for the fuel cell. So the fuel cell is a component within this entire renewable structure of energy, that we feel is important. It shouldn't be overlooked.

And at the last workshop I was at I didn't feel we were really adequately represented. And so as the other gentleman who was just here said, I hope that the renewable resource doesn't end up being title, "photovoltaic only" because we feel we're in there. We are with an emerging technology. That technology is out there in the market today. It has cost-competitive benefits that are able to be seen right now.

And we would hope that this structure, however you decide to put your money together, would include an option for low-interest loans for municipalities and others who would be interested in putting in a system like this, because they end up costing, by the time you get all the two or three of these put together and the ancillary equipment, they run between 2 and $3 million.

Financing is difficult to come by because everybody says, "What in the world is a fuel cell?"

And the other part of it is that we would hope that some money would be set aside for per-watt level of support, whatever that might be. And if you wanted to match the DOE grant, the mechanism is there to make that fairly simple.

And, thirdly, in the area of new technologies, there are new technologies within the fuel cell arena, such as I put on the board there, the turbined combined cycle systems, which are looking for funding for a demonstration units. And those are coming along. Our company is proposing to put together a photovoltaic fuel cell demonstration production, to be the first one that's outside of the US government facility. It'll be in a commercial setting in Ventura County.

And we've gotten support there, promised support from several agencies, including private funding. And we think that would be a great benefit on the new side, to see something like that in place, actually up and working and running in a site where you can go out and kick the tires.

I've got other slides, but I know you're running late and I won't take up any more of your time, unless you have some questions on fuel cells.

COMMISSIONER SHARPLESS: Yeah. I wanted to ask one question. You were talking about low-interest loans. What typically happens when somebody wants to install this type of technology? What kind of commercial financing are they usually able to arrange?

MR. MOE: Commercial clients like hotels and agricultural users that we've approached typically go to a bank, and they say, "Gee, we don't know what a fuel cell is. It doesn't look like much to me," or something like that. And there isn't much interest in financing it.

Municipalities such as we're working with on the waste water treatment, some of them are in a position to go with bond issues or that type of thing, and some are not. Those are right now the clients that we are seeing a real interest in because their cost for a fuel is essentially zero. As the numbers turn out, the cost for natural gas, if your a commercial user, is generating a price of about 3 cents a kilowatt hour at about 30 cents a therm roughly.

And that's a marketable price, but then when you add to that, the finance costs, that's what drives it above those numbers that are being quoted by the utilities which are a little frustrating to us, too, because whereas you see numbers like the average prices of, say, 10 cents a kilowatt hour, in specific locations where we've been in and talked to clients about switching over, they'll come in with this interruptible rate and they'll say, "No, no. It's 6 cents a kilowatt hour." That hurts us.

And we would just like to see a level playing field in this also, so that if it's 10 cents, it's 10 cents. If it's 8 cents, it's 8 cents. We can deal with that, but what we can't deal with is people coming and coming up with a magic number that is just a penny below what we can provide.

MR. MASRI: Orville, are you proposing that fuel cells be classified as a renewable resource for access to this fund from AB 1890?

MR. MOE: Yes, I am. At least the ones that are operating from renewable supplies, such as -- you know, this is a combined situation.

PRESIDING COMMISSIONER MOORE: In other words, that they get methane from landfills.

MR. MOE: Yes. We can get methane from landfills, from gas digesters, from sewer plants. We can get hydrogen from various sources, in addition.

Those systems in particular I believe should be qualified and classified as renewable.

The other qualification which we would hope would remain as is currently written into the law, that these types of cells should have preference just because they are very clean. And the air quality issues of the PC25 class fuel cell is in the very low parts per million versus the allowable federal standards.

And for that reason, it's also good even if it's operating on natural gas, so that the emissions comparisons for fuel cells, plus the renewable energy aspects of it, plus the ongoing research that's embedded in this for getting this industry out of the hundreds into the thousands will drive the prices down to where this technology becomes all the more viable when coupled with the other technology.

MR. MASRI: Okay. The second question: AB 1890 talks about fuel cells as being potentially candidates for fuel switching and therefore that determination is made by the CEC that they are --

MR. MOE: Yes.

MR. MASRI: -- they potentially could qualify for exemption from the CTC.

Could you provide us with some information, not necessarily now, on why you think fuel cells should be classified as fuel switching based on what fuels they replace when they're installed or any other --

MR. MOE: Yes. I've included that information in the handout that I gave to Ms. Sharpless.

And what we're talking about here, as far as I'm concerned, you can run them on natural gas. You can run them on propane. You can run them on landfill gas. You can run them on pure hydrogen from solar decomposition of water. And so they seem to me to certainly qualified, even if you put one in currently running on natural gas, you could switch that to some other supply, if that supply is available at a reasonable cost.

PRESIDING COMMISSIONER MOORE: Thank you very much. We appreciate it.

We're at the end of all the blue cards that I've received. Are there others who have a response to something that they've heard, who wish to address us?

All right. Then here's our procedure. What we're going to does we're going to -- we'll caucus again to discuss what we've heard. What we expect to see at the next workshop is we expect to see that there are at least three major proposals floating out there not all of which could be considered mutually exclusive.

We think that at least in informal conversations that I've heard or have been a party to, there seems to be a certain complementarity about some of the proposals, certainly, and that's what you would expect anyway, is that in a sense they describe a kind of a smorgasbord of opportunity.

But we expect some more detail, and we expect real numbers. Now when I use the word "real," let's be clear what that we're talking about. We're expecting relative value numbers.

Nobody's going to try and hold a player to a certain discrete number.

We're aware that different discount rates get used to evaluate these things, different timeframes. I just admonish you if you do use time series or some other temporal measure in order to make your case, identify the discount rate, identify the time period that's involved so that we can have some rudimentary way of comparing the apples to apples, oranges to oranges.

Where you need another industry or a legislative action or some other market mechanisms, a cross-subsidy of one kind of another, please identify where it would come in, its magnitude and any alternatives that are relevant should it not be available.

Third, if you describe any kind of a market system that involves tradable commodities, that involves some sort of tradable option or anything else that is needed to make your system viable, would you identify the mechanism and the control or regulatory mechanism that you expect to be in place to make it work.

For instance, you could discriminate between something where you created a commodity that literally had to have SEC approval, okay? If you do that, tell us that you've done it.

If you are implicitly suggesting that the CEC or a successor agency or a body that we would set up, for instance, there's been a mention of a nonprofit foundation in a couple of instances, would be the control mechanism for dispersal of funds, recommendation of fund levels, or some other marketing technique, please identify it and let us know how you think that would be controlled, regulated, set out, staffed, etcetera. We'd like to know that.

And I guess the last thing is address the questions that we set out, because it'll give us a better framework. I mean if you can't answer all of the questions that were laid out, that's fine. Put item *XX*, no answer, can't calculate, don't have enough information. That's fine. But just to give us a basis of comparison.

We're very appreciative. And I believe I speak for everyone about the fact that everyone traveled so far in many cases to come and address us, and your continued attendance and attention to this.

We will crack it. And hopefully in the end it'll absolutely be a community effort. It's not going to look like Michal and Jan crafted something. It's going to look like something that we've simply put our arms around and caused to fine tune, at least that's our hope.

Bob, you have a comment.

MR. JUDD: Just a quick question for --

MS. SHAPIRO: Bob, you want to come up to the mic so it can --

MR. JUDD: Okay. Be glad to. Sure.

Bob Judd from the Biomass Alliance. In the Commissioner's opening remarks, you indicated quite clearly that whatever proposals came forward should be consistent with the principles of 1890.

1890 appears relatively transparent in terms of what it requires as criteria for allocation. For instance, I was just wondering if there is anything behind comments made by Commissioners about consistency with 1890 that we should be aware of above and beyond the specific language of the bill?

PRESIDING COMMISSIONER MOORE: There's no hidden hidden there. It's just that you know that when this is all said and done, that's the standard to which we have to measure. And, again, there are ambiguities in the law. We're all aware of those. We'll try. And the responsibility to tease appropriate whether it meets the test is ours. But just to remind that you when you're setting something up, that's the test we have to apply.

And so, for instance, there was some discussion earlier about whether or not we ought to reinstitute a renewables portfolio idea. Well, the Legislature dealt with that. They dealt with it pretty clearly, and they said, no, they didn't want that. Well, we're not going to reinvent that, okay?

And then we have to have a set of tests that are met within the law just so you know that when we and our Staff get together to look at this, that's the template that we're going to lay over it.

MR. JUDD: Good enough. Thank you.

PRESIDING COMMISSIONER MOORE: Let me just amplify what I was saying earlier.

Again, in our published documents you are all aware that one of the focus points, a very important focus point, along with a set of related questions that'll be considered at the next hearing will be the certification criteria. So comments should be directed to that. I know that in the back end it's important to every one of you who qualifies, who doesn't.

In the end it may be a fairly simple process, but again we'll be very focused on that for part of that hearing, trying to understand a narrower range of comments on certification criteria, so please be prepared to discuss those with us.

Yeah. Come to the --

MR. WENGER: Hi. Howard Wenger representing the photovoltaic collaborative.

You mentioned that there's three major proposals. I was just curious.

PRESIDING COMMISSIONER MOORE: Oh, I, you know, --

MR. WENGER: If you could identify which ones you --

PRESIDING COMMISSIONER MOORE: I was speaking in round terms. There are several. Let me erase the number three.

There are several. What we --

COMMISSIONER SHARPLESS: Depending on how you count.

PRESIDING COMMISSIONER MOORE: -- consider serious proposals. And I'll simply qualify them as that. There are variants on the theme of each of them. There are serious proposals out there. We recognize that. And those serious proposals we expect to come back with more detail.

MR. WENGER: Thank you.

MR. MASRI: May I ask Howard a quick question?

PRESIDING COMMISSIONER MOORE: Sure.

MR. MASRI: Howard, does the Office of Ratepayer Advocates support your PV for U proposal that you made here today?

MR. WENGER: Not explicitly. We hope to gain their acceptance explicitly by the 26th.

PRESIDING COMMISSIONER MOORE: Thank you all for coming very much. Drive carefully. It's pretty wet out there.

[Workshop concluded at 4:13 p.m.]

--o0o--

CERTIFICATE OF REPORTER

I, **SUSAN PALMER,** a duly commissioned Reporter of **CourtScribes**, do hereby declare and certify under penalty of perjury that I have recorded the foregoing workshop which was held and taken at the **CALIFORNIA ENERGY COMMISSION RENEWABLES PROGRAM COMMITTEE WORKSHOP on the Implementation of Restructuring Legislation (Chapter 854, Statutes of 1996 AB 1890): Renewables**, in Oakland, California on the **19th day of November 1996.**

I also declare and certify under penalty of perjury that I have caused the aforementioned workshop to be transcribed, and that the foregoing pages constitute a true and accurate transcription of the aforementioned workshop.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, nor in any way interested in the outcome of said workshop.

Dated this **22nd day of November 1996** at Foresthill, California.

SUSAN PALMER
REPORTER